



50 YEARS OF
NEW YORK STEAM
SERVICE

1882



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FIFTY YEARS OF NEW YORK STEAM SERVICE



Fifty Years After

Fifty Years *of* New York Steam Service

*The Story of the Founding
and Development of a
Public Utility*



NEW YORK STEAM CORPORATION
NEW YORK, 1932



PIONEERS



NEW YORK was a spreading city of low, flat-roofed houses in 1879, when a man with the courage to believe that the people of the Metropolis could be persuaded to buy their steam heat and power as they bought their gas and water—from underground pipes, fed by a central supply station—set about organizing a company to initiate an enterprise that despite great obstacles was destined to become an important factor in the life of the community.

The Brooklyn Bridge had not been completed, and no Statue of Liberty graced the harbor. Along the waterfront, still appeared a cobweb of masts and sailing gear of the romantic, slow-plying age of seamanship. From amidst the monotonous expanse of three and four story buildings, the steeple of Trinity Church and the twin spires of the recently completed St. Patrick's Cathedral reached majestically skyward as the principal landmarks of Manhattan Island. Undreamed of were the familiar skyscrapers of today.



WALLACE C. ANDREWS



CHARLES E. EMERY



GAMALIEL C. ST. JOHN

PIONEERS



New York was a spreading city of low, flat-roofed houses with the spire of Trinity Church and the tall twin chimneys of The New York Steam Company dominating the downtown section

Life in the city moved along with leisure and dignity. One traveled in a horse car, an omnibus, or a victoria drawn by a spanking pair in silver-mounted harness—according to one’s means—while now and then a daring man wearing a long-visored cap would scorch past, perched on a bicycle with a very high wheel in front and a tiny one behind. Silk hats and square-topped derbies were the rule for prosperous business men. To be truly collegiate, a young man had to raise a full beard or at least a good heavy, overhanging mustache. Financiers and doctors generally affected curious flowing side whiskers, facetiously referred to as “mutton chops”. Every male who considered himself a gentleman took great care to have not the slightest crease appear in his trousers, and the more fastidious parted their hair down the back of their heads.



Indian warfare was still a part of western life

The people of the Metropolis, as elsewhere, got along without automobiles or traffic officers or electric lights, or subways or radios, or the X-ray or motion pictures, and only a few had telephones. There was no such thing as Standard Time. Each town kept its own time, according to the sun or the railroad station clock. There were only thirty-eight states in the Union and, in parts of the West, United States troops were still engaged in Indian warfare.

While it was an age of extreme conservatism, an age of Victorian habits and manners, it was also an age of expansion when men strove for high stakes. The pioneers of industry were even then laying the foundations of the vast developments of the future—of steel and oil and implements of the farm. The pioneers of transportation had but recently completed the transcontinental rail system and were connecting, link by link, the communities of the West and the South. In New York, the first elevated railways were in operation. The transportation of passengers from Harlem to Grand Central Station no longer blocked the crossings of Fourth Avenue, now known as Park Avenue, the underground tunnel into the heart of the city having been then but recently completed.

Upon this scene, almost simultaneously, appeared Thomas A. Edison



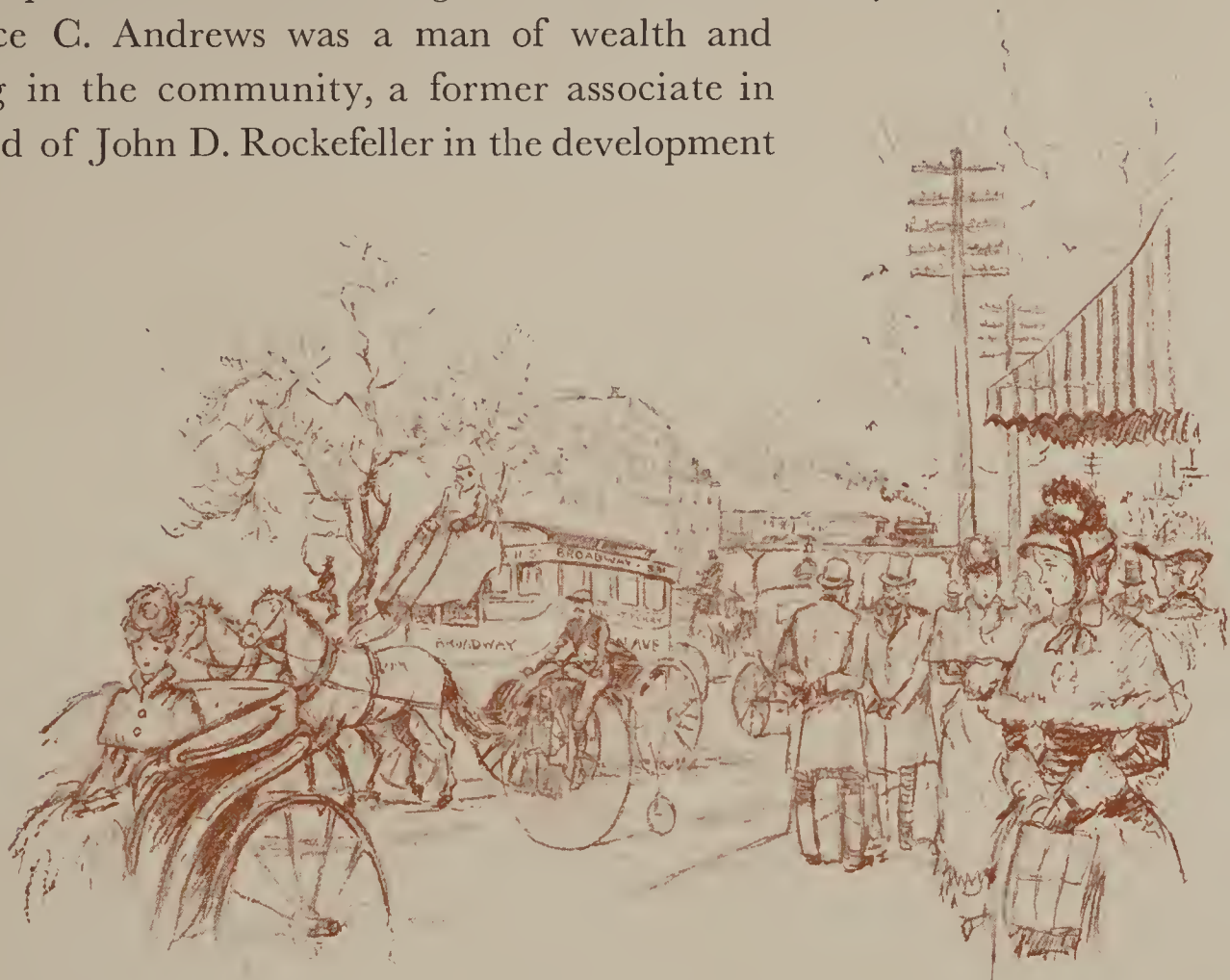
A rare photograph of lower New York at the time of the founding of The New York Steam Company, showing Brooklyn Bridge not yet completed



The New York skyline of the nineties, in which the "H. O." chimneys of the Steam Company still held a commanding position

with his electric light and power projects, and Wallace C. Andrews with his plan for supplying the people of New York with steam for heating, power and cooking from central generating stations. As Edison at the age of thirty-two had the enthusiasm of youth and the vision of the born inventor, so likewise had Andrews at the age of forty-six, the wisdom of experience and the courage to foster a new industry.

Wallace C. Andrews was a man of wealth and standing in the community, a former associate in Cleveland of John D. Rockefeller in the development



The elevated railroad was in its infancy; people still traveled in omnibuses and carriages, and some rode quaint looking bicycles



A man of sartorial distinction and impressive bearing was Wallace C. Andrews, as he rode in his carriage to his business appointments

of the oil industry, and a member of the first Board of Directors of the Standard Oil Company. But he was not the kind of man to be satisfied with money alone. He was above all else an achiever, a born pioneer, a perpetual striver for something new—one to recognize a practical idea and develop it into a definite accomplishment.

And withal, Mr. Andrews was a handsome man of impressive bearing, emphasized by certain peculiarities of dress, toward which, it seems, several outstanding capitalists of the day had strong leanings.

His suits and fancy waistcoats were the envy of his rivals, and his tall glistening beaver hats in winter and his equally high gray felts in summer were his special marks of sartorial distinction. Although he was always



The corner of Forty-second Street and Broadway, long before it was known as Times Square

THE GARDEN OF EDEN.

OR,

*An accurate Description of
all Flowers and Fruits now
growing in England, with par-
ticular Rules how to advance
their Nature and Growth, as
well in Seeds and Herbs, as
the secret ordering of Trees
and Plants.*

By that learned and great
Observer,

Sir HUGH PLAT, Knight.

And now published by the Authors
own Manuscript.

LONDON,

Printed for William Leake, at the
Crown in Fleetstreet betwixt the
Two Temple Gates.

1653.

driven by carriage to business and about town, he was not what, in the parlance of today, would be termed "high hat". Indeed, he was too human and too successful a promoter for that.

When news reached him of experiments in central station steam heating being conducted at Lockport, New York, by another courageous pioneer and inventor—Birdsill Holly, the father of district steam heating—Mr. Andrews acted quickly. He, himself, went to Lockport and was so

Pages from Sir Hugh Plat's book, published in 1653, in which he first advanced the idea of heating with steam. Only two copies of this book are known to exist in the United States

pag. 50

Flowers, Hearbes.

thereby to give fresh earth when need is to the rootes, and to remove the old and spent earth, and so in your windowes. See more of this in Numb. 30.

Roses or
Carnations in
Winter.

30. To have Roses or Carnations growing in Winter, place them in a roome that may some way be kept warme, either with a dry fire, or with the steam of hot water conveyed by a pipe fastened to the cover of a pot, that is kept seething over some idle fire, now and then exposing them in a warme day, from twelve to two, in the sun, or to the raine if it happen to raine; or if it raine not in convenient time, set your pots having holes in the bot-

and Seedes.

pag. 51

bottom in pans of rain water, & so moysten the roots.

I have known Master Jacob of the Glasse-house to have Carnations all the winter by the benefit of a roome that was neere his glasse house fire; and I myselfe, by nipping off the branches of Carnations, when they began first to spire, and so preventing the first bearing, have had flowers in Lent, by keeping the pots all night in a close roome, and exposing them to the sun in the day time, out at the windowes, when the weather was temperate this may be added to the Garden (mentioned N^o. 29.) to grace it in Winter, if the roome stand conveniently

C 2

for

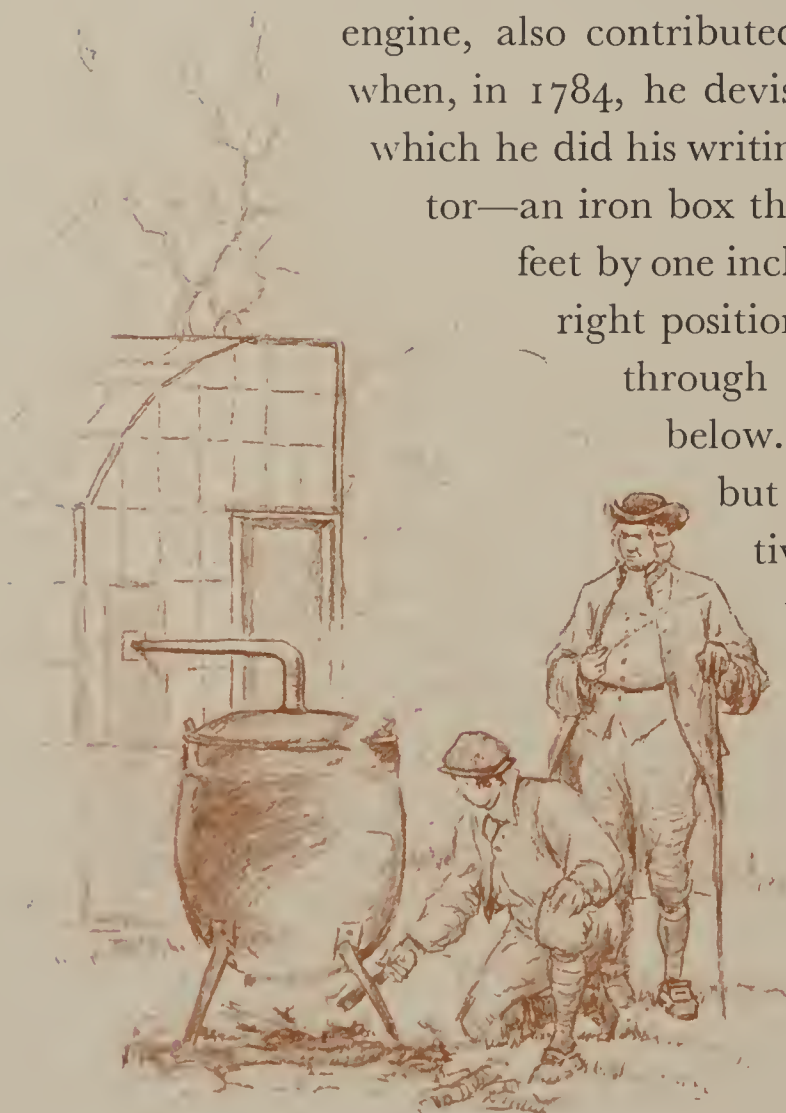
impressed by what Mr. Holly had done, that he sent a technical expert to investigate the proposition from every angle. The man selected was the eminent engineer, Charles Edward Emery, who as early as 1869 had begun the study of steam distribution and had done much valuable work for the United States Navy during and after the Civil War. Mr. Emery's report fully substantiated Mr. Andrews' preliminary conclusions.

THE DAWN OF A NEW INDUSTRY

Heating with steam was not a novelty when Birdsill Holly began his experiments. In fact, over two hundred years before, Sir Hugh Plat, an Englishman, had put steam to work as a heating medium. Sir Hugh, in addition to being a lawyer, was a florist—an ardent and learned one—and he also had an inventive turn of mind. So, in order to keep his greenhouses at an even temperature during the winter months, he hit upon a simple plan which he describes in a treatise published in 1653, reproductions from which are shown on page 11. Briefly, to the cover of a large iron pot, he fastened a long pipe extending into the greenhouses; then he filled the pot with water which he kept simmering over a small open fire.

The Scotchman, James Watt, in addition to perfecting the steam engine, also contributed to the advancement of steam heating when, in 1784, he devised an apparatus for heating the room in which he did his writing. His was probably the first steam radiator—an iron box three and one-half feet by two and one-half feet by one inch. This box, which he installed in an upright position near the floor, was supplied with steam through a pipe leading from a boiler in a room below. The pipe not only conveyed the steam but took care of the condensation. This primitive radiator was provided with a cock at the top to let out the air.

Thus in principle he introduced both steam heating and the steam radiator for home use, but it was not until 1844 that the general heating of buildings by



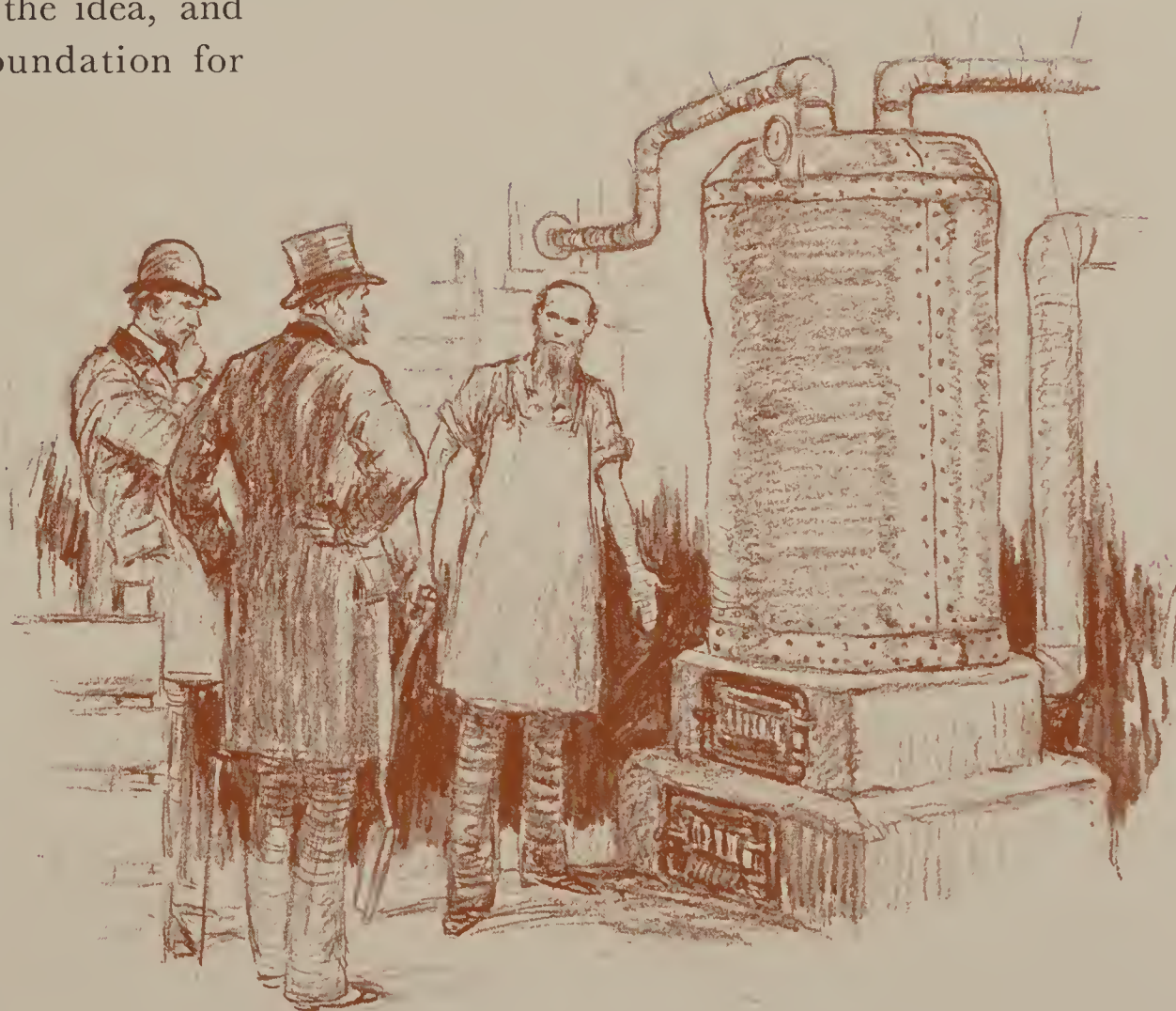
*Sir Hugh Plat introduced
steam heating in his green-
houses in 1653*

steam radiators was begun. The first building in this country to be so heated was the Eastern Hotel, on Causeway Street, Boston, Massachusetts. With the expectation of heating incoming drafts, steam pipe coils were installed around the windows and doors. Whether this system was over-effective or whether technical difficulties arose, is not known, but the records state that when the steam was turned on, the occupants of the hotel had to go out.

Without doubt, Birdsill Holly was the first to attempt supplying steam to a community from a central steam station, and although his experiments were conducted along lines comparable in simplicity with Sir Hugh's early effort, he proved the practicability of the idea, and thereby laid the foundation for



Birdsill Holly, father of district steam heating



At the risk of blowing up his home, Mr. Holly installed the first experimental district steam heating plant in his basement in Lockport, New York



The first district steam heating plant to serve a community—erected in Lockport, New York, by Birdsill Holly

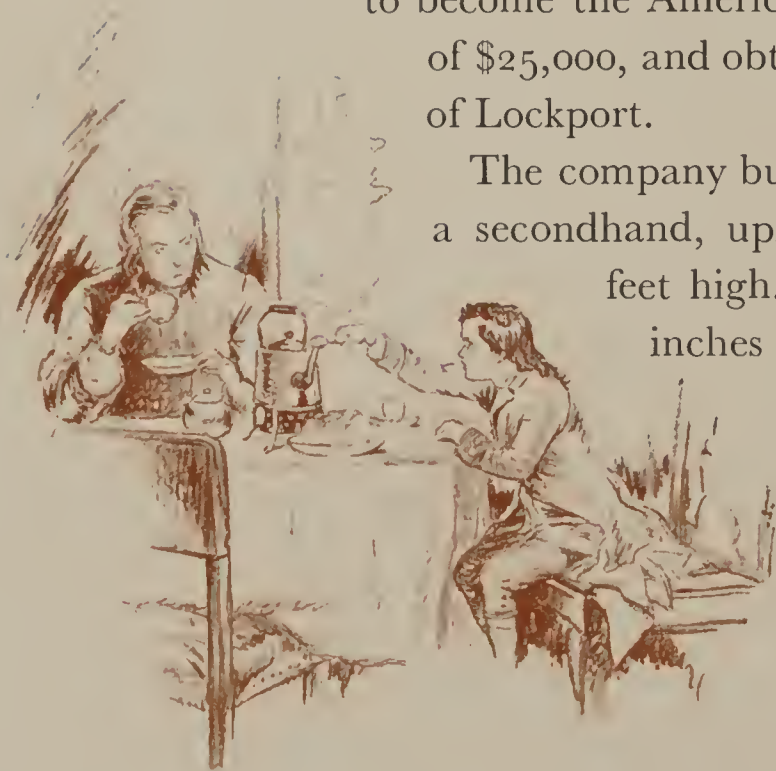
an important industry of today.

At the risk of blowing up his home, Mr. Holly had placed a small boiler in his house on Chestnut Street, Lockport, and from it had run a one and one-half inch pipe around his back yard and across adjoining property for 490 feet and then back into the house, where steam was fed into crude coils serving as radiators. The pipe was insulated with asbestos, felt and paper, tied on with twine, and finally encased in long wooden boxes meas-

uring ten inches by twelve inches, filled with sawdust and buried to a depth of about three feet. When the steam was turned on, the contrivance worked.

Mr. Holly's next step was to extend the pipe to a nearby house which also received heat from the little boiler. He then was able to organize the Holly Steam Combination Company, Limited (later to become the American District Steam Company), with a capital of \$25,000, and obtained a franchise to lay steam pipes in the streets of Lockport.

The company built a small boiler house in which was installed a secondhand, upright boiler, seven feet in diameter and ten feet high. To supply sufficient draft, a chimney, thirty inches square and thirty feet high, was erected. Next, about 2,350 feet of mains, ranging from two



James Watt, whose boyhood discovery led to his perfecting the steam engine, also experimented with steam heating



The birth of district steam service—first excavation for laying supply mains in Lockport, New York

inches to four inches, were laid, with connections to the principal churches, residences and hotels. The service pipes were one inch or three-quarters of an inch in diameter.

Such was the stage of development of district steam heating in the United States when Wallace C. Andrews decided to introduce the system in New York City.

The courage required was little short of stupendous. Lockport, after all, was merely a village, and the new system had been proved correct in principle only. The heartbreaking discovery of weaknesses, revealed by everyday experience, had still to come. Yet Mr. Andrews was ready to tackle New York, the



A bicycle racer of those days took his life as well as his handlebars in his hands



An Easter parade on Fifth Avenue when the Steam Company was very young and before the twin Vanderbilt mansions, at the left, had been quite completed

Metropolis of the United States—a city of paved streets, of intricate sewer systems and water and gas mains, and a city that above all had first to be convinced.

The Common Council of the City of New York, in December, 1878, had granted permission “to Francis B. Spinola and his associates, subject to such terms, limitations, restrictions, and conditions, as may be fixed by the Commissioner of the Sinking Fund, to lay mains and pipes within the lines of the streets, avenues and public places in the City, with such connections as may be necessary for the purpose of supplying steam under ‘The Holly Combination System’ to the City and its inhabitants for heating, cooking, and all other domestic purposes, as well as for any and all uses for which steam can be employed.”

Shortly afterward, Mr. Spinola and one of



Enterprising municipal authorities gave this Venetian touch to the lake in Central Park



Steamboats were side-wheelers, and sailing vessels predominated in the harbor of New York when the Steam Company was founded

his associates, Hawley D. Clapp, secured the enactment of enabling legislation. Of the two acts passed, Chapter 290 of the Laws of 1879 amended the Manufacturing Corporations' Act of 1848, by permitting the formation of a corporation to carry on the business of "supplying of hot water, or hot air, or steam for motive power, heating, cooking or other useful applications in the streets and public and private buildings in any city, village or town in this State." The other act, Chapter 317 of the Laws of 1879, permitted such a corporation, upon giving satisfactory bonds, "to lay pipes or conductors for conducting hot water, or air, or steam through the streets, avenues, lanes, alleys, squares and highways in such city, village or town with the consent of the municipal authorities of state, city, town or



Bowling Green in the early nineties



Fifth Avenue looking south from Forty-second Street in 1881 when the reservoir occupied the site of the present Public Library



A rare photograph of Greeley Square in 1893, when there wasn't an automobile in sight and "Chimmie Fadden" was attracting crowds to the Standard Theater

village and under such reasonable regulations and conditions as they may prescribe.”

Mr. Andrews acquired the so-called Spinola franchise and also a license for the exclusive use in New York City of the “Holly Steam Combination System” under certain letters patent granted to Mr. Holly, and on July 24, 1879, incorporated “The Steam Heating and Power Company of New York”.

The capital stock was stated to be \$5,000,000, consisting of 50,000 shares of \$100 each. The certificate named the following as the four Trustees who were to manage the concerns of this company: Wallace C. Andrews, of Cleveland, Ohio; Hawley D. Clapp, of New York City; Asahel W. Humphreys, of Brooklyn, New York, and James W. Hawes, of New York City.

Within a few weeks after the organization of the company, Mr. Clapp died, and Mr. Spinola, with whom he had been associated in obtaining the Spinola permit, was chosen to fill the vacancy. The number of Trustees was increased to six, Mr. Emery and Jabez A. Bostwick being added.

On July 26, 1880, another company was formed under the corporate name of “The New York Steam Company” with James A.



When Fifth Avenue was paved with cobblestones and the famous hotel (in the center of the picture) was known as the Waldorf. The “Astoria” part had not yet been built

Trucking was a business in which horses furnished the sole motive power, and obviously the accepted headgear for a full-fledged truckman was a derby hat





Style tips which the camera recorded on Fifth Avenue near Thirty-third Street as the elite were taking their stroll in 1905

Briggs, N. Edson and C. W. Hunt as Trustees. A franchise was obtained from the Board of Aldermen on December 14, 1880, which gave the company, its successors or assigns "the right to lay mains and pipes in any and all the streets, avenues, lanes, alleys, squares, highways and public places in the City of New York, with the necessary and proper laterals and service pipes thereto, for the purpose of supplying to the city and its inhabitants, for motive power, heating, cooking or other useful applications, steam, water, air, and other fluids, at both high and low pressure, with necessary return pipes, and to make all necessary excavations in the said streets, avenues and other places aforesaid, for the purpose of laying such mains and pipes, and of making all necessary additions, repairs and alterations thereto, and of putting in place any manholes and vaults necessary to secure convenient access to parts requiring adjustment * * *."



Elevated cars were propelled by little steam locomotives



Broadway, looking north from the Post Office in 1890, before the cable (now electric) line was laid

In order to be able to operate under this broader franchise, and to avoid duplication in the form of a second steam distribution system, Mr. Andrews acquired a controlling interest in the new company and was made President of this company also. On September 19, 1881, he effected a consolidation of The Steam Heating and Power Company of New York and The New York Steam Company, the name of the latter being retained. The number of Trustees was increased to nine: W. C. Andrews, J. A. Bostwick, J. A. Briggs, C. E. Emery, N. Edson, A. W. Humphreys, C. W. Hunt, C. C. Peck and R. E. Rockwell. Mr. Andrews was elected President; Mr. Bostwick, Treasurer, and Messrs. Andrews, Bostwick and Emery, an Executive Committee. All of these had occupied similar positions with The Steam Heating and Power Company of New York. Shortly afterward, Mr. Hunt resigned, and his place was filled by William P. Shinn who became Vice President of the Company.

Among the original stockholders of the Company were Mrs. Ulysses S. Grant (wife



Forty-second Street in the eighties with traffic apparently having its difficulties

Trustees
May 3
1881

A special meeting of the Trustees was held at 16 Cortlandt St., at four o'clock P.M., May 3^d 1881. Present Messrs Andrews, Bastwick, Emery, Humphreys, Rockwell.

The minutes of the last meeting were read and approved.

Messrs Bastwick and Emery Committee on Consolidation with The New York Steam Co., reported in favor of consolidation and advised the adoption of the following draft of Agreement on the basis of such consolidation.

"This Agreement made this day of _____ in the year eighteen hundred and eighty one, between The Steam Heating and Power Company of New York and The New York Steam Company, Corporations organized under the act entitled "An act to authorize the formation of corporations for manufacturing, mining, mechanical or chemical purposes," passed February 17th 1848, and the acts amending and extending the same, the objects for which said companies were respectively organized being the same or of a similar nature.

Witnesseth: -

That pursuant to the provisions of Chapter 960. of the laws of 1867 as amended, and for their mutual advantage and profit, the said companies are hereby consolidated into a single corporation.

That the name of the new Corporation is
The New York Steam Company.

A page from the minute book of The New York Steam Company, recording the meeting of May 3, 1881, at which the consolidation of The Steam Heating and Power Company of New York and The New York Steam Company was agreed upon



Scene near the office and plant of The New York Steam Company in the eighties. This is Cortlandt Street when a horse car line was one of its distinguishing features. The first office of The New York Steam Company was at 16 Cortlandt Street. The steam generating plant can be distinguished in this picture by the "H. O." chimneys

of the Civil War General and President), Oliver S. Carter, H. O. Armour, E. K. Willard, John D. Brookman, Addison Cammack, Egbert Starr, J. A. Bostwick, R. M. Hoe, J. L. Macauley, and a number of others prominent in financial and social circles.

CONSTRUCTING NEW YORK'S FIRST SYSTEM

It had taken nearly two years to obtain the necessary capital and to make adequate preparations for the undertaking, but by the early fall of 1881, Mr. Andrews had assembled his personnel, headed by Mr. Emery, and at once began the gigantic and hitherto untried task of laying steam

Commuters of that day got plenty of fresh air, and the conductor had to be somewhat of an acrobat to collect his fares



mains under the city's pavements and of erecting the first central station steam plant in New York City.

Mr. Andrews and Mr. Emery, indefatigable workers both, tackled the project with enthusiasm. The city was divided into ten districts, and land was acquired in each district for the erection of central boiler plants. Speed was especially necessary because of competition that had arisen



An illustration tracing the progress of heating, printed in a contemporary publication, and inspired by the advent of The New York Steam Company. At the upper left is depicted the primitive method of heating without even a smokestack; upper right, the coal-burning stove, invented by Benjamin Franklin; center left, the hot-air furnace, introduced in 1870; center right, an early magazine stove which fed itself; lower left, a later type of magazine stove, and lower right, one of the first district steam heating systems

from an unexpected source. Rival capitalists had organized a company, known as the American Steam Company, and were straining every nerve to lay mains and begin operations in advance of The New York Steam Company.

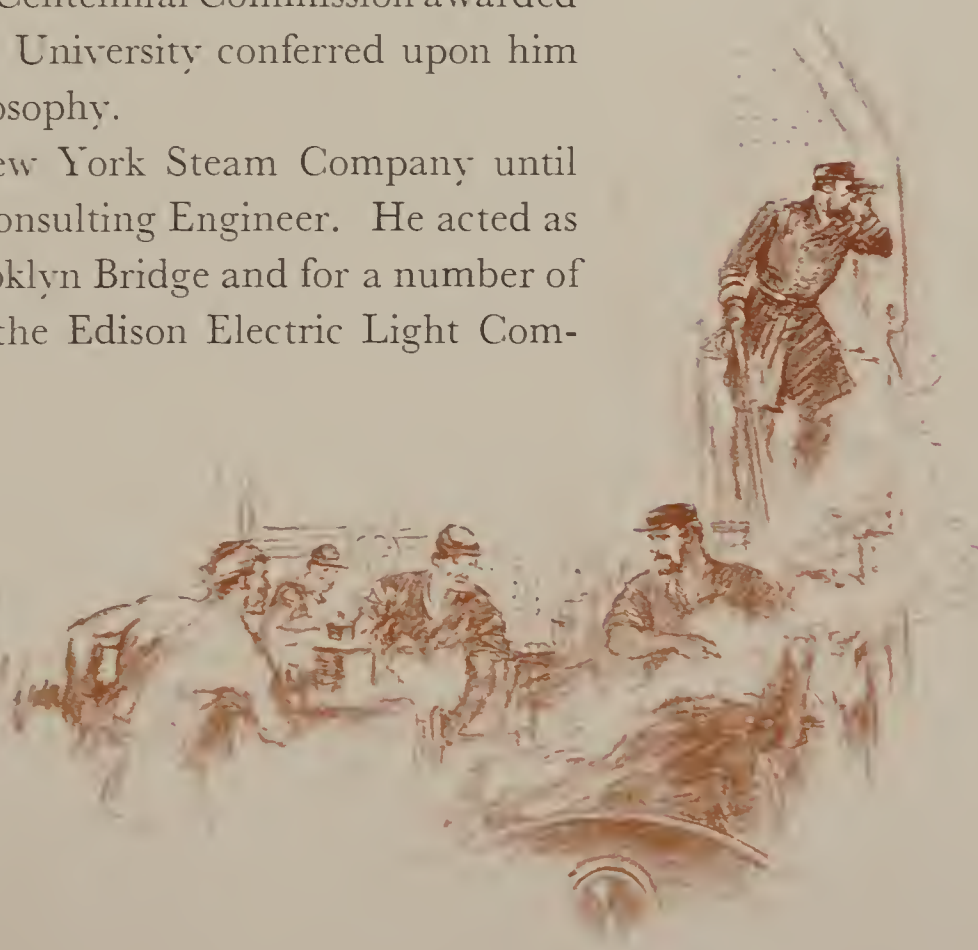
New York, of course, had its generous share of skeptics who were quite positive that the idea was nothing more than a new-fangled impractical dream. They busied themselves with writing letters to the newspapers, and presently the newspapers themselves began violent attacks upon the new Company because of the torn-up condition of the streets. The project was frequently referred to as "Andrews' folly". Yet, in spite of such opposition, the work was pushed forward night and day.

Fortunately, coupled with Mr. Andrews' indomitable perseverance was the exceptional physical endurance of Mr. Emery. Six feet, two inches tall and weighing 250 pounds, he had withstood the rigors of the Civil War as a Marine Engineer, having engaged in blockade duty and taken part in various important battles. After the war, he had risen rapidly as an expert in the field of steam engineering, and at the time he was engaged by Mr. Andrews, was considered one of the leading engineers of the day.

In 1869, he had been appointed Consulting Engineer and Chairman of the examining board of the United States Coast and Geodetic Survey and the United States Revenue Marine. For the latter service, he designed and constructed engines for twenty new vessels and remodelled many others. His work brought him the appointment, in 1876, as one of the judges of engines, pumps and mechanical appliances for the Centennial Exposition, Philadelphia. The Centennial Commission awarded him a medal, and in 1879, New York University conferred upon him the honorary degree of Doctor of Philosophy.

Mr. Emery remained with The New York Steam Company until 1888, later establishing himself as a Consulting Engineer. He acted as consultant in connection with the Brooklyn Bridge and for a number of important clients, among which was the Edison Electric Light Com-

Charles E. Emery, the Steam Company's first Chief Engineer, had seen much active service as a marine engineer in the Civil War





On his nocturnal rounds when Engineer Emery was laying the first steam mains in Manhattan, he often met and consulted with Thomas A. Edison, who also was tearing up the streets to lay wires for the Edison Company

pany (the parent company which licensed the various local electric utilities throughout the country to use the Edison system of generation and distribution). In 1889, the Institution of Civil Engineers of Great Britain awarded him the Watt medal and the Tilford premium, and in 1893, he was appointed one of the judges of dynamos and motors at the Columbian Exposition in Chicago. Later, Mr. Emery was elected Chairman of the Committee to revise the code of 1884 for steam boiler trials. For many years, until his death in 1898, Mr. Emery was non-resident Professor of Sibley College, Cornell University.

But in the work Mr. Emery had undertaken in 1881 for The New York Steam Company, there were few precedents to follow. Learning and experience were not so much needed as ingenuity, practically every step being in the nature of an experiment. So, during the day, in the Company's first office at 16 Cortlandt Street, Mr. Emery did his planning, his hiring of men, his testing of materials, and all the other multitudinous duties that devolved upon the technical head of the enterprise. At night, he would inspect the laying of the steam mains. Under torchlight, he would climb into the trenches, frequently helping in the bolting of a joint or the insulating of a difficult section.

On these nocturnal rounds, he often met two men. One was the engineer of the rival company and the other was a friendly man with a massive head and bushy eyebrows who asked innumerable questions and cupped a hand over one ear when receiving the answers—a man whose name as the inventor of the talking machine was already a household word the world over—Thomas A. Edison.

Mr. Edison at that time was engaged in giving New York another pioneer utility somewhat similar in character—central station distribution of electric light and power. He, too, was tearing up the streets, but for the purpose of laying wires for The Edison Electric Illuminating Company of New York (later to become The New York Edison Company), which began the distribution of electric energy just six months after The New York Steam Company had started supplying steam to its first customer.

Years afterward, Mr. Edison recalled these chats under flickering

torchlight with Mr. Emery, and spoke of them to T. Commerford Martin, author of the volume, “Forty Years of Edison Service”, who quotes the great inventor as follows:

“While I was digging the trenches and putting in the tubes in the several miles of street in the First District, The New York Steam Company was also digging trenches and putting in steam heating pipes. Mr. C. E. Emery, then the Chief Engineer, and I would meet quite frequently at all hours of the night, I looking after my tubes and he after his pipes. At the same time that Emery was putting down his pipes, another concern started in opposition to The New York Steam Company and was also working nights putting down its pipes in Maiden Lane. I used to talk to Emery about the success of his scheme.

“I thought he had a harder proposition than I had, and he thought that mine was harder than his. But one thing we both agreed on, and that was that the other steam heating engineer hadn’t any chance at all, and that his company would surely fail. If he, Emery, was right, the other fellow was wrong. Emery used mineral wool to surround his pipes, which was of a fibrous nature and was stuffed in boxes to prevent the loss of heat and pressure, whereas his competitor was laying his pipes in square boxes filled with lampblack.

“Before Emery had finished all his pipes and was working in the street one night, he heard a terrible rush of steam. It seems that his competitor had put on steam pressure to test out his pipes. There was a leak in the pipe; the steam got into the lampblack and blew up, throwing about three tons of lampblack all over the place, and covering the fronts of several stores in Maiden Lane. When the people came down next morning, everything was covered with lampblack—and the company ‘busted’!”

Incidentally, “mineral wool” for insulating steam mains, introduced by Mr. Emery and mentioned with approval by Mr. Edison, is still being used by the present New York Steam Corporation. In fact, such large quantities are required that the Corporation has a subsidiary company which has produced mineral wool continuously since Mr. Emery’s time.

The new Company’s first boiler plant, located on a plot bounded by Cortlandt, Dey, Greenwich and Washington Streets, was erected in



A rival steam company met disaster, as Mr. Edison had predicted, when one of its mains blew up and the lampblack used for insulation forced Maiden Lane into deep mourning with a thick coating of soot

1881. There were installed in the building forty-eight boilers of 250 horsepower capacity each, sixteen boilers located on each of three floors, and space for additional boiler capacity was provided on a fourth floor, constituting what was considered at the time a marvel of ingenuity in construction and efficiency of operation. Today, a single boiler in the New York Steam Corporation's Kips Bay Station has a capacity more than one hundred per cent greater than the combined capacity of the forty-eight original boilers.



Entrance to 16 Cortlandt Street, in which was the first office of The New York Steam Company

The plant was distinguished by a chimney 225 feet high, the tallest structure in lower Manhattan with the exception of Trinity Church spire, and proudly referred to by the newspapers of the day as being five feet taller than the Bunker Hill monument. This chimney, for years the outstanding feature of the harbor skyline, was gazed at with respect by incoming ocean travelers until superseded in interest by the Statue of Liberty. In 1882, The New York Times devoted nearly two columns to a description of this chimney, the writer stating that "half of downtown New York has been troubled with stiff neck watching it" and that on fair days "the front decks of ferry boats are filled with people looking in amazement at this tall tower." The article states further: "the chimney is big enough to be the grandfather of all other chimneys, big enough for a dozen Santa Clauses to drive through abreast with their reindeer sleighs", and adds that 1,056,000 bricks and 700 barrels of cement were used in its construction.

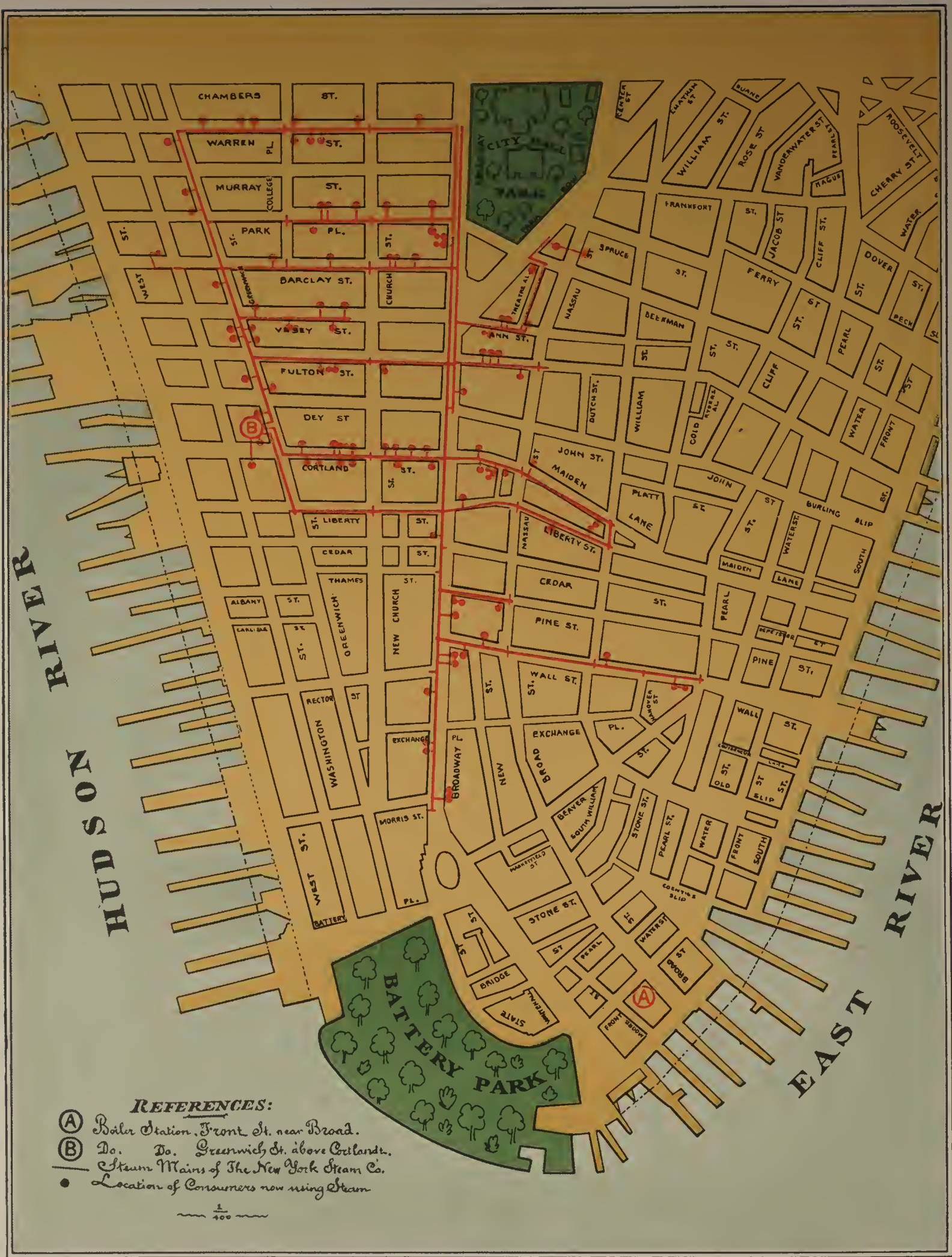
With the initial installation of mains in Cortlandt Street, Maiden Lane and Broadway completed, steam at eighty pounds pressure was turned into a total of about one-half mile of mains for the first time, in March, 1882. During June, the mains were extended to a length of three-quarters of a mile; by July, to one mile, and by November, to three miles. The Company first supplied steam principally for power and cooking purposes, there being little heating required in the late spring and summer.

FIRST CUSTOMERS

On March 3, 1882, the Company started supplying steam to its first customer, the United Bank Building at 88-92 Broadway, on the corner of Wall Street. This building was distinguished at that time by virtue of having two elevators, and these elevators, of course, were operated by the newly available steam power. For many years and until October, 1931, when it was condemned by the Building Department, the building was owned and occupied by The First National Bank of the City of New York. (It is of interest that the new First National Bank Building, which is being erected on the same site, has contracted for New York Steam service.)

Following is a list of the sixty-two customers to whom service was rendered during the year in which the Company began operations—that is, March to December, 1882:

<i>Name</i>	<i>Location</i>	<i>Service Began 1882</i>
United Bank Building (2 Elevators)	88-92 Broadway	March 3
S. T. Smith	14 Park Place	April 21
Metropolitan Job Printing Office (1 Elevator)	38 Vesey Street	April 27
The Hammerschlag Manufacturing Company (1 Elevator)	232-234 Greenwich Street	May 8
Smith & McNell (1 Elevator)	198-200 Greenwich Street	June 1
Charles Hart	36 Vesey Street	June 12
J. Henry Probst	36 Vesey Street	June 12
Continental Insurance Company (1 Elevator)	100-102 Broadway	June 18
J. D. Gilmore (1 Elevator)	203 Greenwich Street	July 7



First published chart of The New York Steam Company system. It was printed in 1882 when the mains extended from Bowling Green to City Hall Park and one small plant, Station B, supplied all the steam. The red bulbs along the mains indicate consumers

Weil Brothers	80 Warren Street	July 12
S. V. R. Cruger (1 Elevator)	19 Barclay Street	August 1
P. Schere & Company (1 Elevator)	11 Barclay Street	August 2
Lloyd & Magnus	12 Park Place	August 4
William C. Owens	40 Cortlandt Street	September 1
American Express Company (1 Elevator)	65-67 Broadway	September 5
E. E. Spencer	34 Warren Street	September 8
Chatham National Bank	196 Broadway	September 15
James D. Hall	178 Greenwich Street	September 15
James A. Alexander	173 Broadway	September 28
J. L. Black	62 Warren Street	October 9
The New York Steam Company	22 Cortlandt Street	October 15
Parke, Davis & Company	60 Maiden Lane	October 15
Randel, Baremore & Billings	29 Maiden Lane	October 15
William Wilson	106 Broadway	October 16
William Kurtz	233 Broadway	October 18
North River Bank	187 Greenwich Street	October 18
Wilcox Silver Plate Company	6 Maiden Lane	October 19
Mutual Union Telegraph Company (1 Elevator)	135-137 Broadway	October 20
Charles F. Matlage	276 Greenwich Street	October 25
Metropolitan Manufacturing Company	32 Cortlandt Street	October 25
Hills Brothers (1 Elevator)	242-246 Greenwich Street	October 26
S. & W. Mela	8 Warren Street	October 26
R. W. Robinson & Company	182-186 Greenwich Street	October 26
Theodore Stewart	8 Warren Street	October 26
A. & F. Brown	44 Park Place	October 29
Thomas Maddock (1 Elevator)	234 Broadway	November 1
New York Safety Steam Power Company	30 Cortlandt Street	November 1
Harty Brothers	205 Greenwich Street	November 3
Fellows Medical Manufacturing Company (1 Elevator)	48 Vesey Street	November 6
F. J. Stone (1 Elevator)	28-36 Liberty Street	November 6
W. Wheeler Smith (1 Elevator)	7 Wall Street	November 13
William Spence	34 Broadway	November 13
Dederick & Company	18 Maiden Lane	November 14
Nash & Crook	39-40 Park Row	November 15
Callanan & Kemp	41 Vesey Street	November 18

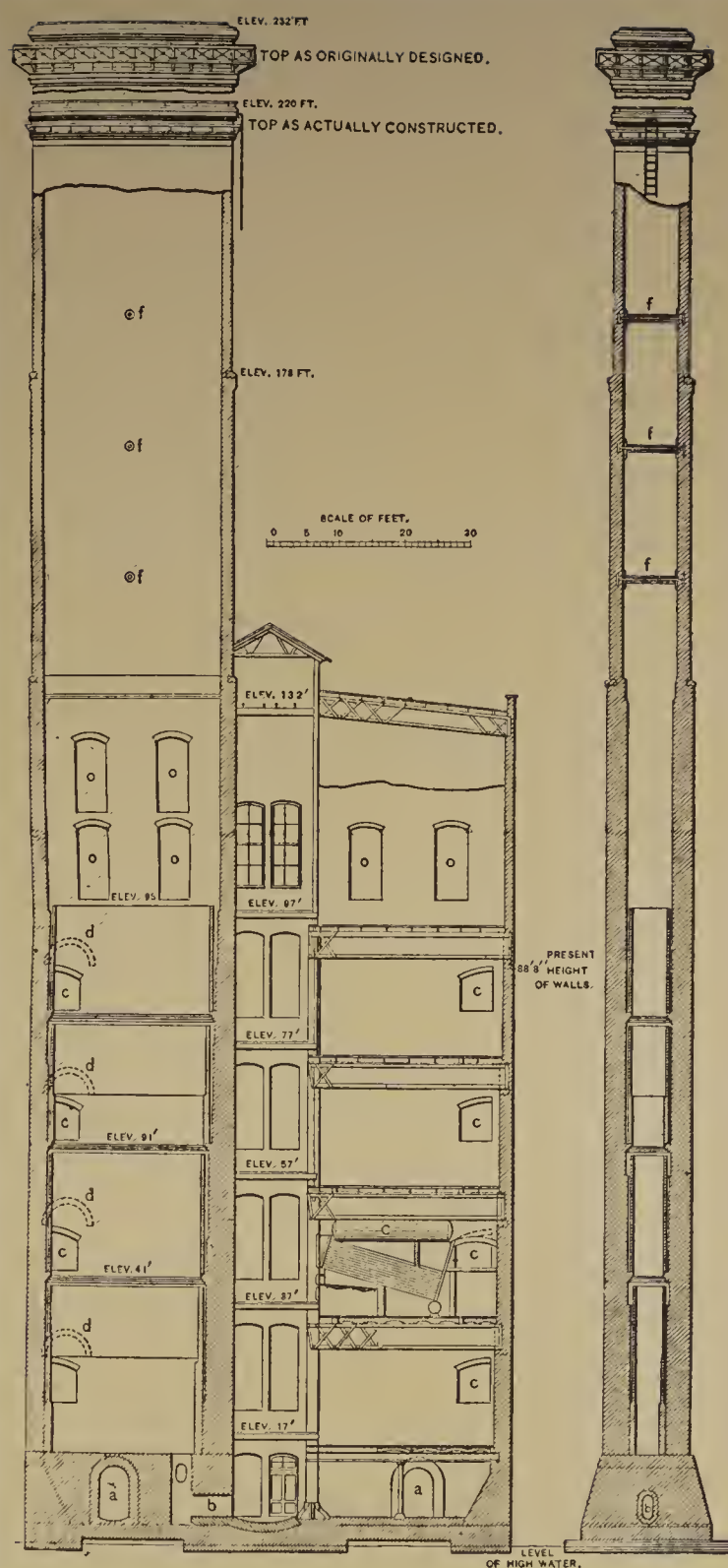
J. H. Hummel	153 Fulton Street	November 21
Hall & Ruckel (1 Elevator)	218-220 Greenwich Street	November 24
Peter Henderson & Company (1 Elevator)	35-37 Cortlandt Street	November 24
J. W. Surbrug	159 Fulton Street	November 28
Jose G. Garcia	23 Liberty Street	December 1
St. Peter's Roman Catholic Church	18-22 Barclay Street	December 1
E. D. Slater	155 Fulton Street	December 1
New York Commercial Advertiser (1 Elevator)	126-136 Fulton Street	December 4
Isaac Goldsmith	78 Warren Street	December 5
Joseph Stiner & Company	204 Greenwich Street	December 5
J. B. Mathewson & Company	20 Maiden Lane	December 11
Peter Smith	10-12 Ann Street	December 12
Paris, Allen & Company	51 Broadway	December 16
Henry Parish (1 Elevator)	67 Wall Street	December 18
A. Simis & Company	1 New Church Street	December 21
A. L. Meyers (1 Elevator)	49 Broadway	December 22
Bank of New York (1 Elevator)	48 Wall Street	December 27



The mansion of Jacobus Kip, clerk of the Common Council of New Amsterdam, which stood on the site of the Steam Corporation's Kips Bay Station for 150 years until torn down in 1852

Despite all the opposition from the press, the new Company made steady progress, and some of the newspapers, themselves, became well satisfied customers, using the steam not only for heating purposes but for running their presses. But the Company was still a long way from having surmounted all its difficulties. Mechanical weaknesses of one kind or another were constantly cropping up and had to be corrected through the ingenuity of Mr. Emery and his associates.

From a technical standpoint, there was still one major defect—the measurement of the steam supplied. The earliest consumers were at first charged for the service according to the cubic contents of the buildings, but this, of course, was a highly unreliable system, especially in office buildings where the whimsies of the various tenants were encountered. Again, with the consumption of steam not measured, few consumers troubled themselves with conservation. It was easier to open a window than to reduce the

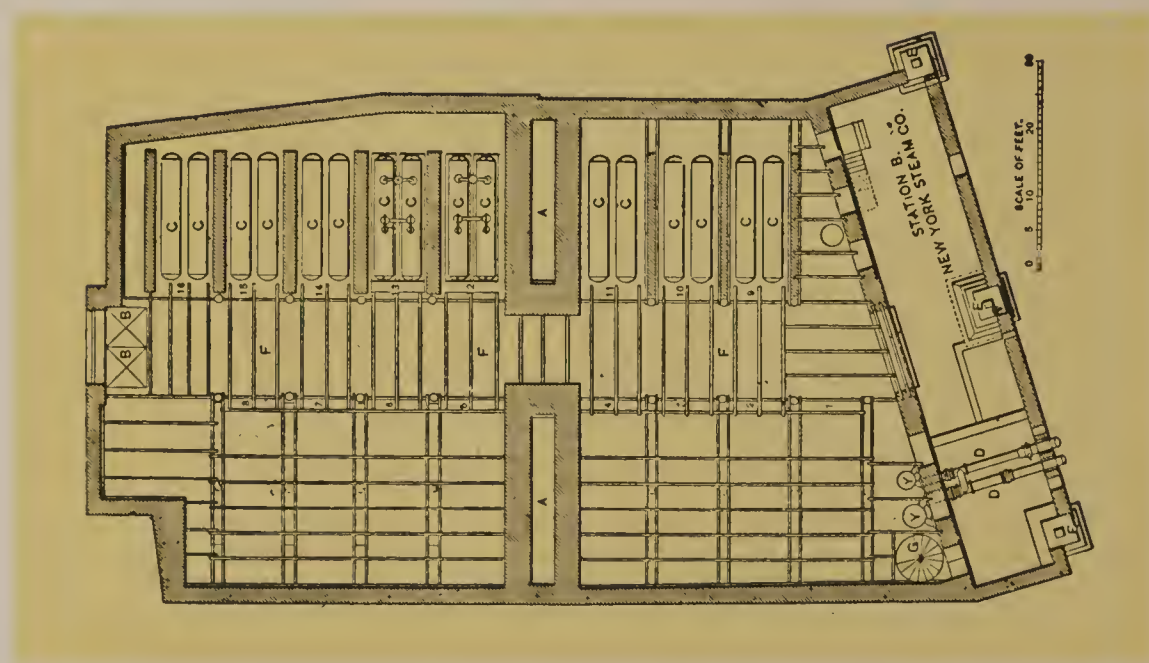


Vertical section of chimney and building of Station B, the first plant of The New York Steam Company, which appeared together with a page of reading matter in "The Iron Age" of July 9, 1885

supply, and more convenient to walk out at closing time and leave the steam on at full blast through the night, than to turn off several valves.

Metering of steam supplied to consumers would have stopped such practices. But the question was what to use for a meter. Here again, pioneering was required, and Mr. Emery developed one of the first recording steam-flow meters to be used in this country. The Emery meter was a distinctly valuable contribution to the ultimately successful and economical distribution of steam in New York City, and the meter was continued in general use by the Company for more than ten years, when it was superseded by an improved type.

Not only was it essential to design a meter, but also to design and produce the reducing valves required for the control of the steam pressure used in the heating systems, and the steam traps required as part of the consumers' equipment. In addition, expansion joints without packing, to provide for the expansion and contraction of the steam mains, and street valves without packing, all to be buried in a closed conduit beneath the street pavement, had to be designed to meet the requirements of the new system, with practically no precedent as a guide. The ingenuity of Mr. Emery seems to have been almost inexhaustible.



Floor plan of Station B as depicted in "The Iron Age" of July 9, 1885

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THE DISTRIBUTION OF LIGHT AND HEAT IN NEW YORK CITY.

The tendency of the day toward the centralization of capital and effort, and the simplification of domestic service through more perfect organization in the supplying of our material wants, is strikingly illustrated in two gigantic enterprises now in progress in this city, both dealing in problems of vital importance in social and domestic economy, and both calculated to do away with time-honored customs and methods.

We have become used to elaborate and wide-reaching systems of conveyance, which have displaced the use of private carriages—to a large extent even the use of the means of conveyance which nature provides. Equally wide-reaching systems of telegraph and telephone lines have brought every man in the community within hailing distance of every other. Our water supplies are laid on in every apartment by means of public water systems employing scores of miles of large aqueducts and thousands of miles of smaller pipes. Night is converted almost into day for us by illuminating gas supplied from central stations. And the next steps of social and domestic organization promise to be the distribution of motive power with our illuminant, and the displacement of our heaters and cooking stoves by steam conveyed through the streets in pipes, making it possible to banish fire absolutely from our dwell-



STEAM DISTRIBUTION—THE STEAM PIPES AND EXPANSION JOINTS.

ings, offices, and factories, either for warming or lighting, for cooking or for mechanical operations, heat, light, and motive power being generated in and supplied from huge central stations.

Although electric lighting and steam heating have nothing in common, the circumstance that progress in each is represented by gigantic enterprises in vigorous prosecution in this city makes it proper to treat of them together in this place.

On the Eastern side of our city, down town, the Edison Electric Light Company is placing a complete system of conductors in the streets, while the New York Steam Company is occupying the streets on the Western side in the work of laying down pipes for the general distribution of steam for heat and power. The central stations of both companies are in process of erection, and preparations for business are making with a prospect of early completion.

The Edison Electric Light Company has laid about three miles of conductor in an area about three-quarters of a mile square, south of Spruce street and east of Nassau street. When this district is complete there will be fourteen miles of conductor under the streets and seven miles of service conductor. These conductors will supply 16,000 lamps, and 400 horse power for driving machinery.

The operations of laying the conductors is shown in Fig. 1. In a trench about two



LAYING THE EDISON ELECTRIC MAINS—THE SERVICE BOXES AND EXPANSION JOINTS
NEW ENTERPRISES IN NEW YORK CITY.

Reproduction of a page from the "Scientific American" of November 19, 1881, illustrating and describing the installation of district steam heating mains in New York

Then there had to be considered that supremely important phase of the new Company's development—finances. With expenses heavy and collections sometimes slow, the outlook was not always dazzlingly bright. There even were times when the harried Treasurer was called upon to use his resourcefulness as well as his resources to “raise” the weekly pay-rolls on Saturdays.



In the early days of the Company, finances were often discussed in the restaurant of Thomas R. McNell, with a view to inducing Mr. McNell, a customer as well as a stockholder, to pay his bill in advance

Occasionally, he and some of his fellow officers, with the important payroll subject in mind, would drop into the restaurant of Smith & McNell, not far from the Company's office, and engage Thomas R. McNell, part owner of the restaurant and a large stockholder in the Steam Company, in a friendly chat during which the hint was dropped that if Mr. McNell felt inclined to pay his steam bill in advance, perhaps a slight discount could be arranged, and besides—! And Mr. McNell, staunch friend and good business man that he was, always obliged.

The opposite of Mr. McNell with regard to the paying of bills, was the United States Illuminating Company whose power station occupied a building leased from The New York Steam Company. The steam purchased was used for operating the reciprocating engines which drove the electric generators. The credit of the Illuminating Company was so poor that the Steam Company demanded weekly instead of monthly payments and frequently threatened to shut off the steam supply if the bills were not paid. As a matter of fact, the Steam Company had to take bonds and stock of the Illuminating Company in part settlement for rent and steam supply.

Subsequently, the United States Illuminating Company was absorbed by The United Electric Light and Power Company which is now a part of the New York Edison system. For a time, there was doubt whether the securities of the Illuminating Company held by the Steam Company would be of any value, but when George Westinghouse reorganized The United Electric Light and Power Company, the securities were taken up and no loss was suffered.

While many financial trials arose, through them all Mr. Andrews' faith never wavered. Forced by circumstances to choose between his holdings in the Standard Oil Company and his interest in The New York Steam Company, he elected to keep the latter going and for nearly three years sold Standard Oil stock at the rate of \$1000 a day to put the money into the Steam Company. Later, having greatly depleted his Standard Oil holdings, he resigned from the Board of Directors, and thus, because of his determination to make a success of the

*The Plaza Hotel looked lonely
in the nineties before it had
the Vanderbilt mansion as a
neighbor*



Steam Company and of some of his other enterprises, he missed becoming an enormously wealthy man in common with the other organizers of the Standard Oil Company.

In the face of countless difficulties, the service of the Steam Company had become so firmly established by 1886, with 350 customers and five miles of mains in the downtown district, that the Trustees of the Company felt warranted in initiating the service uptown. A boiler plant was erected at Madison Avenue and Fifty-eighth Street, and in December of that year, steam was supplied to an area extending north and south on Madison Avenue between Fifty-third and Sixty-seventh Streets, and westward in the cross streets to Fifth Avenue and, in some streets, west of that avenue.

This new district was almost entirely residential, and returns as great as those from the downtown district could not be expected. However,



Interior of a millionaire's home of the eighties, the type of house whose owners were first to adopt district steam heating when it was introduced uptown

announcement that the service had been extended received a warm welcome from fashionable uptown residents, especially women, who saw in it the abolishment of smoke, soot, ashes, dust and dirt, not to mention noise and fire hazards.

The first ten customers to have the steam heating and cooking service installed in their homes were:

Frederick Gallatin	670 Fifth Avenue
Metropolitan Club	756 Fifth Avenue
J. A. Bostwick	800 Fifth Avenue
William Belden	62nd Street and Fifth Avenue
C. A. Postley	817 Fifth Avenue
Dr. A. J. White	846 Fifth Avenue
H. O. Armour	856 Fifth Avenue
John H. Beach	57th Street and Madison Avenue
H. H. Rogers	26 East 57th Street
William Rockefeller	689 Fifth Avenue

Quickly others followed, a list of their names reading like a leaf from the Social Register. Among them were:

Seth Low	John D. Rockefeller
Mrs. Hermann Oelrichs	Daniel S. Lamont
R. Fulton Cutting	W. A. Read
C. Ledyard Blair	Andrew C. Zabriskie
John S. Kennedy	John J. McCook
Wm. Jay Schieffelin	Chauncey S. Truax
Edward J. Berwind	H. McK. Twombly
Thomas Byrnes	John Downey
John Hall, D.D.	John Sloane
H. M. Flagler	E. C. Converse
Henry F. Osborn	Charles A. Baudouine
Charles B. Alexander	John D. Crimmins

The adoption of district steam heating for residential use seems to have had a very beneficial effect also in breaking down prejudices against steam heating generally and the Company in particular, and presently we find many testimonials written by some of the foremost citizens in praise of the new convenience.

H. M. Flagler stated that “the service has been entirely satisfactory” in his home at 685 Fifth Avenue.



'Installing district steam service in New York as depicted in Harper's Weekly of September 9, 1882

John D. Rockefeller wrote: "I have had my house heated for several seasons by steam supplied by your Company, and am satisfied with the service given."

H. H. Rogers also expressed himself as entirely satisfied and added the significant statement: "It has never failed us."

Edwin J. Berwind stated: "I have been using steam supplied by your Company for the past five years at my residence, No. 2 East 64th Street, and am in every way satisfied, having experienced no inconvenience, and always received good service."

William Rockefeller wrote enthusiastically that "the even and abundant supply at all times enables me to obtain much more satisfaction in providing heat for my residence than I ever had before."

Seth Low said: "It gives me pleasure to express my entire satisfaction with this service."

Scores of such letters were received from leading men and women in the city's social, business and political circles, and helped to establish the Company firmly in the minds of the people as a useful and permanent institution.

DIFFICULTIES OVERCOME

Without doubt, many of these testimonials were the result of the severest test the service of the new Company had experienced. This was when it had to contend with the memorable blizzard of 1888, and managed to pull through that icy deluge without an interruption in the service. As everyone knows, this great blizzard of March 11-14 surpassed in intensity anything of its kind New York ever experienced. Traffic in the entire city was tied up completely for days; many people died of exposure, and thousands were unable to leave their places of business until some of the snow had melted or tunnels had been shoveled to rescue them.

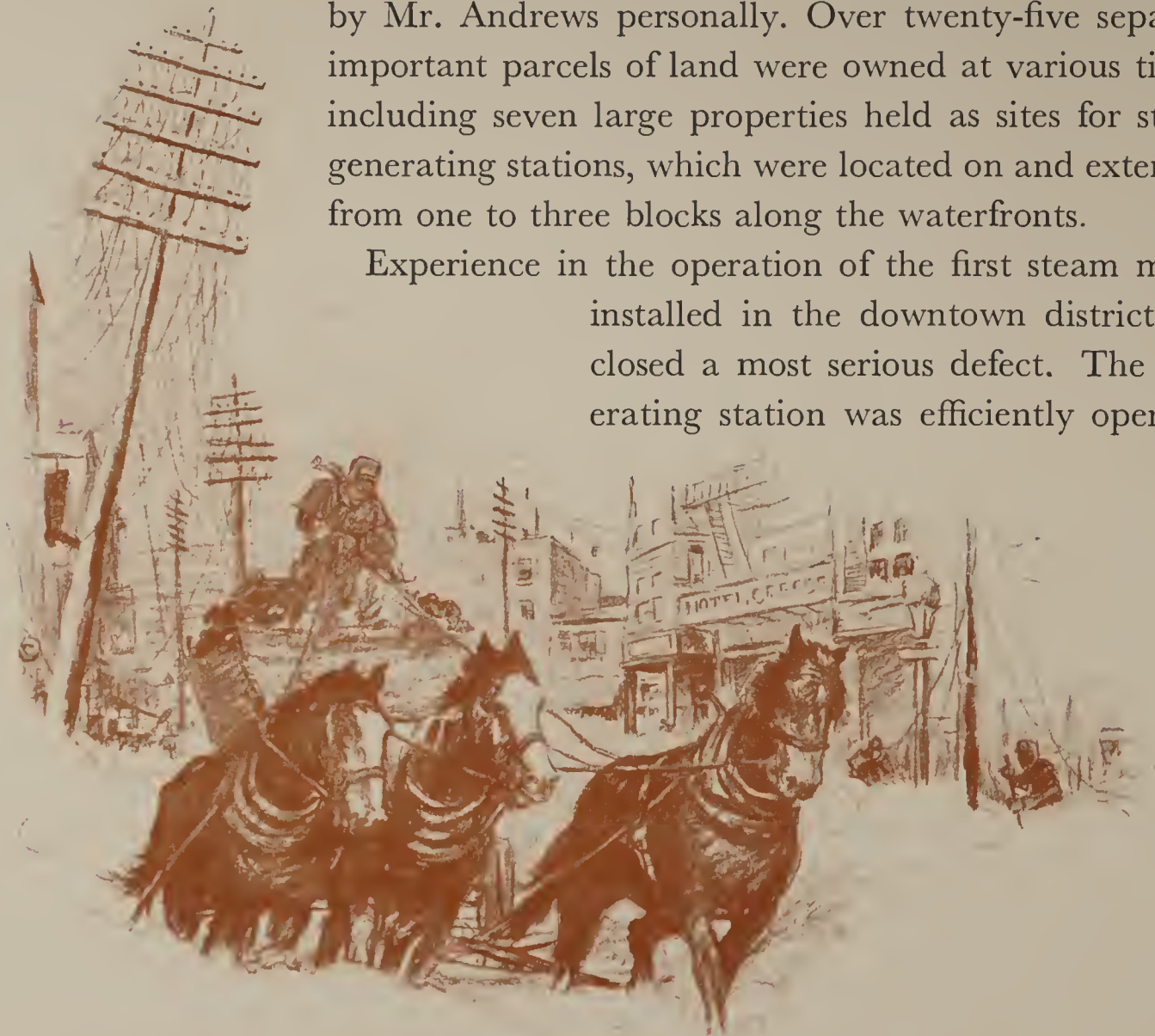
The New York Steam Company at that time was purchasing its coal supply from the firm of Curtis & Blaisdell, whose main supply plant was at Fifty-sixth Street and the East River. In common with all other businesses, the coal company's delivery system was entirely demoralized by

the blizzard. Realizing, however, the importance of keeping the New York Steam plants supplied, the coal company employed a gang of shovelers, and Grove D. Curtis, himself, drove trucks for several days to deliver coal to the steam plant at Fifty-eighth Street and Madison Avenue, thus saving a situation which would have caused much suffering and again would have brought on a wave of criticism.

The original idea of establishing ten steam generating stations in as many districts on the Island of Manhattan, was abandoned because of the greatly improved facilities for the transmission of steam over long distances. A number of the properties which had been acquired for the location of outlying stations were sold and are not now owned by the New York Steam Corporation. However, an interesting memento of the regime of Wallace C. Andrews is a book of maps showing the real estate

owned at various times either by the Steam Company or by Mr. Andrews personally. Over twenty-five separate important parcels of land were owned at various times, including seven large properties held as sites for steam generating stations, which were located on and extended from one to three blocks along the waterfronts.

Experience in the operation of the first steam mains installed in the downtown district disclosed a most serious defect. The generating station was efficiently operated



The president of a coal company himself drove a truck during the blizzard of 1888 in order that the Steam Company's boilers might be kept going

P. Van Dusen



Photographs of New York streets following the great blizzard of 1888 which paralyzed traffic for several days, but proved the efficiency of district steam service under the worst weather conditions

and consumers were adequately served, yet if testimony of newspapers of the day were to be entirely relied upon, there were but few tight joints in the whole distribution system. While such claims were greatly exaggerated, it was evident that some of the pipe joints were not holding as they should.

Mr. Emery's original method of joining lengths of pipe was ingenious. It provided for the use of relatively light wrought-iron tubing rather than ordinary pipe, with the tube rolled into a cast-iron flange, much in the fashion in which a tube



A contemporary artist's impression of the terrific blizzard of March 11 to 14, 1888, at its height

is installed in a water tube boiler. The lengths of pipe so flanged were then bolted together with gaskets between. The only trouble was that, while the boiler tube seldom leaked, the lengths of tube in the street mains often leaked, and some better form of pipe joint became essential.

In 1886, the first mains laid in the new uptown district were of wrought-iron full weight pipe with screwed cast-iron flanges, and some five years later it became necessary to reconstruct substantially the entire steam main system in the downtown district, replacing the old tubes with screwed pipe and flanges.

No wonder that development of central station steam service in New York City lagged behind that of its contemporary of 1882, the electric light and power industry. Even with the relaid distribution system in

the downtown area and the later installed system south and east of Central Park, all constructed of screwed flange pipe, the further experience of less than ten years demonstrated that the new type of main, while an improvement over the old, was not entirely satisfactory.

At this stage, a man of legal training with a mechanical turn of mind, whose sister Mr. Andrews had married, applied himself to the task of solving this problem. He was Gamaliel C. St. John, who for several years had been Secretary of the Company and who was destined later to succeed his brother-in-law as President. The idea was conceived of welding a steel flange at the ends of each length of steel pipe and then bolting the flanges together with a gasket between. However, opposition was encountered from many experts who said the thing could not be done.

Finally, Mr. St. John took a short piece of steel pipe to a small welding establishment and succeeded in having a flange welded to one end of it. Then the experts said that there was a vast difference between welding a ring on the end of a little pipe and successful quantity production of large steam mains similarly equipped. But Mr. St. John went to the president of the National Tube Company, who sent him to Pittsburgh to consult with the foreman of its principal plant. This man, a powerful, burly Scotchman with a full beard, studied the proposition for a long time and then announced conclusively: "'Twould be a gran' thing, but it ca' na be doon."

At length he was persuaded to try, and after experimentation lasting six months, in 1896, welded flange pipe was an accomplished fact. So sound was the idea, advanced more than thirty-five years ago, that pipe lengths fabricated at that time are today giving most satisfactory service.

Since about 1897, welded flange pipe has been used exclusively in extending the distribution mains, which in the near future will constitute a unified and interconnected system from the Battery to Ninety-seventh Street. Practically all mains of earlier de-



*"'Twould be a gran' thing,
but it ca' na be doon"*



Society of the gay nineties when district steam heating had come to be considered one of the essential comforts of a fine home

sign have been replaced with the improved type of construction. Although involving two relayings of some mains, a tremendous hurdle in the progress of district steam distribution was surmounted, while, with increasing demands, a pressure of from 125 to 135 pounds has now been made available to the consumer.

After all these years, a few of the old pipes are still doing valiant service and are proving to the engineers and investors of today that longevity and the consequently limited requirements for replacements, are features of a district steam distribution system. Recently a main in Fifty-seventh Street which had been serving efficiently for forty-five years was dug up. Even after almost half a century, it was only the need for a larger main that caused the old pipe to be replaced. There was no indication that the action of the steam had weakened the pipe, careful measurements showing that there had been practically no diminution in the thickness of the metal.

While the development of welded flange pipe was in



Even outside the offices and printing plants, district steam service quickly attracted a following. This illustration was drawn after a large one appearing in a Harper's Weekly of the eighties

THE APPARATUS OF THE NEW YORK STEAM COMPANY.

DIRECTIONS FOR USING.

In the cut, *A* is the steam meter, and *B* the meter register. The series of pipes and valves at the right is called the meter combination. *S* is the street steam pipe, *P* the power pipe, and *H* the heating pipe. *C* is the service steam trap, *d* is the regulating valve. Left hand meter combinations have the valves similarly arranged but on the left of the meter. Occasionally regular meter combinations are not used, but valves can always be found corresponding to those shown in the cut.

TO TURN STEAM ON AND OFF THE METER COMBINATION.

The inlet valve *b*, in the lower horizontal pipe is usually marked with a red tag, and should be always kept wide open, so as to insure a full supply of steam to the meter. If this be neglected, steam is supplied at reduced pressure, and is necessarily charged for at the higher pressure at which the consumer is entitled to have his steam measured. When steam is not required, the supply from the meter should be shut off by closing the outlet valve *c*. The wheel of this valve, or the one corresponding thereto, is usually marked with copper wire to distinguish it. When steam is shut off in this way, the meter is kept hot and steam may be turned on to the power pipe *P* again at any time by simply opening the outlet valve *c*. Before doing this a drip, near the engine or other apparatus supplied from the power pipe, should be opened to allow the air and water to escape.

TO TURN ON AND OFF THE HEATING SYSTEM.

Steam for heat will first be turned on by the employees of the Company and may be shut off when not required by closing first the outlet valve *h* of the regulating valve and next the inlet valve *g*, without interfering with the supply of steam for power. These valves should also be closed when the meter is shut off, as explained in the preceding paragraph.

TO START THE REGULATING VALVE.

First open wide the outlet valve *c* of meter, then open the outlet valve *h* of the regulating valve a little, and afterward open the inlet valve *g* gradually, until it is wide open, when the outlet valve *h* should also be opened wide. Should the regulating valve jump while being heated up, a little steam may be first passed through it, and the pressure introduced to the heating pipe *H*, by the use of the regulating valve pass by *i*. When everything is heated up, the regulating valve may be started as explained, and pass by *i* closed.

TO START THE HOUSE TRAP.

There will be located on the returns from the heating system a house trap resembling the service trap *C*, on the cut of the meter and combination, but generally of larger size. The water from the house returns will be ad-

mitted through the inlet *n*, and discharged to the street return pipe through the outlet valve *p*. In general it will be sufficient to open the outlet valves *n* and *p* at the time of turning on steam. In connection however with the house trap, it is desirable to have a blow-off from the house returns into a sink or bucket, which can be opened on turning on steam, to hasten the circulation by letting out the air and water more promptly than it will pass through the trap. It is against the rules of this Company to lead this blow-off to the sewer, as it frequently becomes leaky and is occasionally left open, occasioning a very considerable waste which cannot readily be detected. The small valve *r* is used for testing the trap by the inspectors of the Company. Just back of it is shown a small air valve in the bonnet of the trap which may be opened to let the air out of the trap if the

steam does not readily circulate so as to heat the metal. Special traps will be explained by the inspectors of the Company.

TO CHANGE THE HEATING PRESSURE.

The heating pressure may be increased by putting on more weights or decreased by taking off weights, each weight representing approximately one pound pressure. There must be sufficient weights kept on to maintain a pressure which will return the water of condensation to the street. This will require from four to eight pounds according to location of the premises. If a less pressure is required a special trap must be used which will be explained by the inspectors of the Company. When a spring is used instead of weights it will be better in general to have the adjustments of pressure made by the inspectors of the Company. In case the heating pressure varies so as to cause suspicion

that the regulating valve has become stuck, from particles of dirt carried along with the steam or otherwise, a slight jar on the yoke of the valve may loosen the obstruction. If not, the use of this valve should be discontinued by closing the valves *h* and *g*, and the steam supply for heating be admitted through the heating pass by valve *i* to maintain the desired pressure as shown on steam gauge *f*. This will require attention until the Company is notified and the regulating valve put in order in due routine. Low pressure heating apparatus should in all cases be provided with a small safety valve which will open and give notice to the attendant when the regulating valve becomes inoperative for any reason.

TO REGULATE THE HEAT IN THE BUILDING.

The temperature of separate rooms may be regulated by adjusting the registers, when an indirect system is used, and by shutting off and turning on direct radiators when the same are placed directly in the room. The temperature of the whole house may be changed by varying the steam pressure, as previously explained, being careful not to run it so low in any case that the water of condensation will not be returned to the street. When building is still too warm, with lowest pressure admissible, shut off progressively the direct radiators and the registers of the indirect radiators, and if necessary have some of the coils and risers shut off in the basement. When the custom prevails of keeping steam on all night it will be found unnecessary, except in the severest weather, to use all of the heating coils. After a little experience the attendant will learn just what coils are required in different kinds of weather to maintain a uniform temperature.

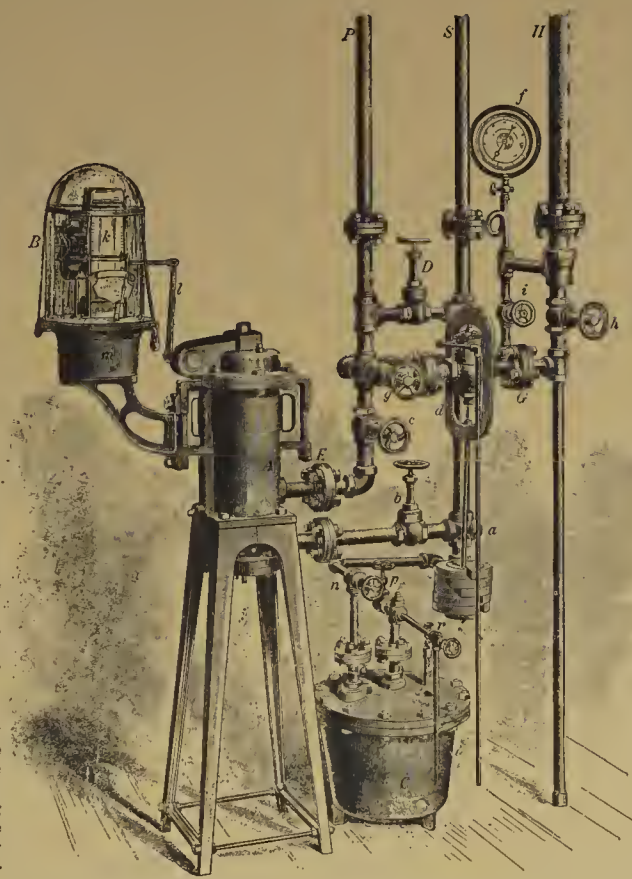
It is recommended that thermometers be placed in different parts of the house, and care taken to maintain a temperature of seventy degrees in all connecting rooms habitually used by the family. Ladies, who frequently require a higher temperature, will in due time learn to accustom themselves to this temperature in ordinary house dress, and gentlemen desiring a lower temperature will, by changing coats on entering the house, readily become satisfied with this compromise. It will be found that the maintenance of a uniform temperature, not higher than that stated, will greatly aid in preventing all members of the family from catching cold on passing from the house to the street.

A comfortable moisture may be maintained by arranging for a slight escape of steam from one or more of the heating coils.

CHARLES E. EMERY,

Manager and Engineer.

General Offices of The New York Steam Company, No. 22 Cortland Street, N. Y.
Up town offices, 58th St., near Madison Avenue.



An interesting early circular prepared by Charles E. Emery giving directions for the use and regulation of district steam service and picturing the meter and other service apparatus. An average temperature of seventy degrees was recommended. Ladies requiring a higher temperature were advised to accustom themselves to seventy degrees and gentlemen who found this too warm were instructed to change their coats on entering the house

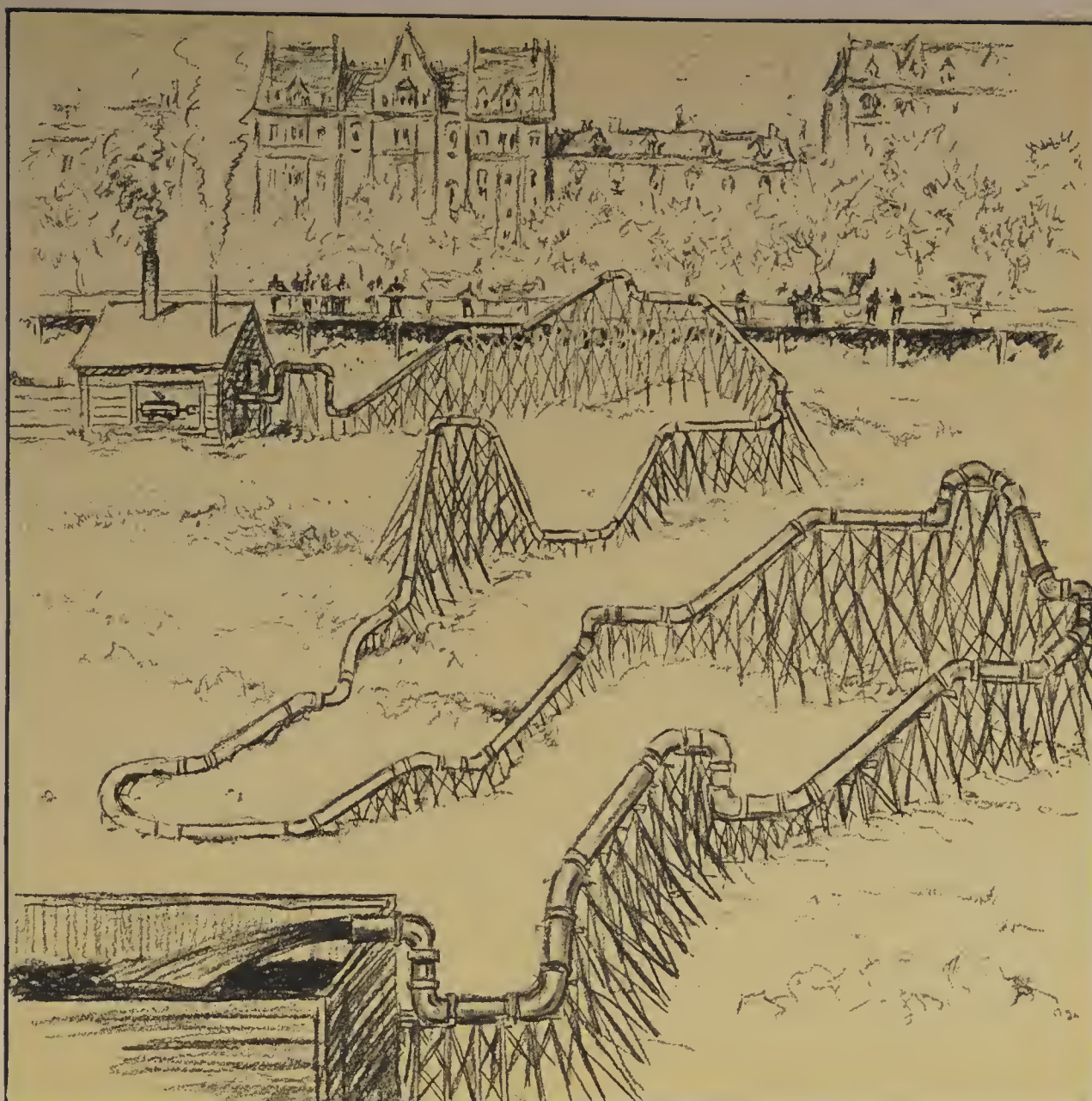
progress, Mr. St. John turned his attention to another need that had arisen—a steam-flow meter of greater simplicity and durability than the Emery meter. One of the principal troubles experienced with that meter was the rapid deterioration of the working parts, resulting in a loss to the Company of meter registries after a relatively short period of operation. Patents on a new meter were obtained in 1897. While in recent years the device has been subject to continued improvement, in principle, the design of the measuring element has remained the same.

ANDREWS' VARIED INTERESTS

To be happy, Mr. Andrews had always to be the motive force or the originator of some new project. He was in many respects a man several decades in advance of his time. During the middle eighties, Mr. Andrews, always looking to the future, had devised what he thought was a more economical method of transporting coal from the mines, cheap fuel being a matter of vital importance to the Company.

To this end, he invented a process for pumping coal through pipes from the mines to the place of consumption, and on March 31, 1891, was granted a United States patent for a "Method of Transportation". He found that by grinding the coal to a fine powder and mixing it with water in proportions ranging from fifty to eighty per cent, he could pump the mixture at the rate of five miles an hour for any distance, regardless of varying altitudes. He estimated that with pumping stations located twenty to thirty miles apart and developing a pressure of 1200 pounds a square inch, 28,000 tons of coal a day could be transported through a twenty-four inch pipe.

Experiments were carried on at the plant of the Company at Fifty-eighth Street and Madison Avenue and on vacant lots adjoining, where Mr. Andrews installed a complete coal pumping system with a pipe running over scaffolding and around corners to simulate cross-country pumping conditions. For months at a time, a powerful pump drove a mixture of pulverized coal and water through this pipe. This experimental plant was inspected by many large coal users of the day, including Andrew Carnegie and H. C. Frick, who agreed with Mr. Andrews



Passersby were invariably attracted by the curious undulating pipe device which Mr. Andrews erected on vacant lots at Fifty-eighth Street and Madison Avenue for conducting his pulverized coal pumping experiments

that he should be able to carry out his plan of delivering coal from the mines by pipe lines throughout the eastern states and westward, even as far as Chicago, just as oil was then being distributed through pipes from the wells.

In a printed pamphlet dated May 1, 1892, Mr. Andrews disclosed his plan in some detail, and in describing the recovery and utilization of the fuel he said: "When sent through the pipe line, however, and delivered into tanks or settling ponds and becoming quiescent, it settles very read-

ily; 80 per cent will settle the first hour, and the balance say overnight, and the water is ready to be drawn off the next morning. In this condition of moist substance of pure coal, it is all right to be immediately put into coking ovens by chain conveyors or other convenient method, or used for making gas. When delivered to be used under steam boilers, the small amount of moisture remaining can be evaporated, and when the dry powder of bituminous coal is blown into the firebox, the atoms will *explode* and form the next best fuel to natural gas. For domestic use it will be made into briquettes * * *.” And in a prospectus dated February, 1897, Mr. Andrews stated that tests which he made by “exploding the fine coal into a gas, making a roaring noise like burning crude oil or natural gas” showed an efficiency twenty per cent greater than that obtained with the usual methods of firing.

At the Columbian World Fair in Chicago in 1893, Mr. Andrews exhibited his pumping system and was granted an award by the Commission of Judges, who stated in their report that “this method is destined ere long to become the carbon thoroughfare for the transportation of the motive power of the ages.”

Mr. Andrews had acquired large tracts of land on the New Jersey meadows on

World's Columbian Commission.

EXECUTIVE COMMITTEE ON AWARDS.

JOHN ROYD THADTIER, Chairman, Utamp, N. Y.
 H. J. SKIVELL, New Jersey. A. F. BRITTON, District Columbia.
 A. B. ANDREWS, North Carolina.
 H. B. SMALLEY, Ex Officio Member, Burlington, VT.

BUREAU:
 ADMINISTRATION BUILDING,
 JACKSON PARK,
 CHICAGO, ILL.
 1893.

J. T. DOUGLASS, M. E., Chicago, Ills.

“METHOD OF TRANSPORTATION.”

(By Pumping Coal Through Pipes.)

GROUP 63.

CLASS 338.

No. 17,473.

Report of Board of Judges. (Unanimous.)

This Exhibit consists of a specially constructed pump with a suction and discharge pipe, which demonstrates a system of transporting comminuted coal through pipes, 50% being coal and 50% water, the water being used as the vehicle of carriage. The flow is regular and rapid.

This Exhibit is most remarkable, and we believe the method pregnant with certainties for the future transportation of coal from distant points through main pipes, as surely as for local use.

Our judgment is that this method is destined, ere long, to become the carbon thoroughfare for the transportation of the motive power of the coming ages, and, for its great economic features, we recommend an award.

Facsimile of the award bestowed upon Mr. Andrews at the Columbian World Fair at Chicago in 1893, for his pulverized coal pumping system

THE FIRST BUILDINGS TO BE SUPPLIED WITH DISTRICT STEAM SERVICE



St. Peter's Roman Catholic Church at 18-22 Barclay Street, which has been supplied since December 1, 1882



The Mutual Union Telegraph Company (tall, square building) at 135-37 Broadway, which began the use of district steam on October 20, 1882



The United Bank Building, home of the First National Bank of the City of New York, at Broadway and Wall Street—the first customer of The New York Steam Company. This building was supplied from March 3, 1882, until recently when it was torn down to make room for a modern building which has contracted for New York Steam service



The United States Post Office at Broadway and Park Row, another early customer of The New York Steam Company

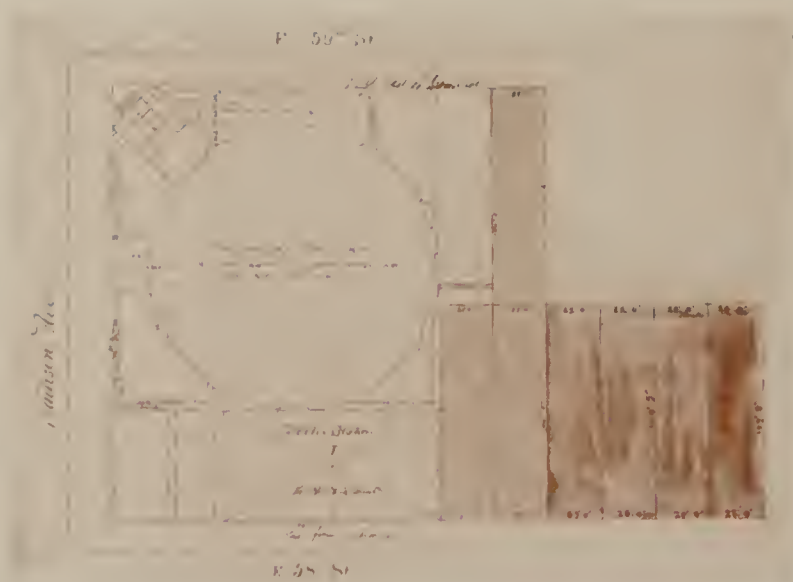


Facsimile of a carefully engrossed title page of the book listing and illustrating the parcels of land owned by The New York Steam Company in 1881 and intended as sites for steam generating plants

which were to be constructed settling basins for the purpose of removing the water from the mixture pumped from the mines. His plan was then to barge either powdered or briquetted fuel to New York and to burn it in the plants of The New York Steam Company. For this purpose, he leased docking space near the foot of Dey Street, from which point he intended to convey the fuel underground across West Street and through property owned by the Company, continuing under Washington Street and thence to the steam station on the block bounded by Cortlandt, Dey, Washington and Greenwich Streets.

Although attention to his many interests and his untimely death prevented development of all Mr. Andrews' ideas, it is inter-

Plan of the once famous Panorama Building, which shared the block on Madison Avenue between Fifty-eighth and Fifty-ninth Streets with the first uptown station of The New York Steam Company. The shaded lots at the right were those on which Mr. Andrews conducted his coal pumping experiments



esting that about thirty-five years later, in 1926, there was placed in operation at the Kips Bay Station of the New York Steam Corporation, one of the largest powdered fuel burning boiler units in the world.

As a leader in the establishment of other public utilities, Mr. Andrews was eminently successful. He organized and was President of one of the first artificial ice manufacturing companies in New York, which he established in 1890. Prior to that, he had become an important figure in the artificial gas field as President of The Standard Gas Light Company of the City of New York, which after Mr. Andrews' death was acquired by the Consolidated Gas Company of New York. He was also a Director of The

Map showing the location of The New York Steam Company's properties in 1882. Mr. Andrews' original intention was to build a plant on each of these sites, but the advance of district steam generating methods made unnecessary such an elaborate chain of plants



THE ANDREWS INSTITUTE FOR GIRLS



The will of Mr. Wallace C. Andrews provided for the founding of this school with the object of training girls to become self-supporting

These pictures, taken in 1911, a year after classes opened, show (above) the main building; (right) a sewing class, and (below) a domestic science class





It will be noted from this title page that the telephone company was finding it necessary to advise subscribers to use numbers instead of giving the name

Safety Car Heating and Lighting Company, the Standard Coupler Company, The New York Yacht, Launch and Engine Company, and other companies.

Mr. Andrews recognized the advantages of cooperation between business enterprises. A circular of The Standard Gas Light Com-

The telephone was still a source of wonder as well as a convenience

50

NEW YORK CITY.

SUBSCRIBER'S NAME.	NUMBER.	ADDRESS.
N. Y. Roofing Co.....	21st st .. 45.....	437 East 23d street.
N. Y. & Rosendale Cement Co. Murray.	269.....	229 Broadway.
N. Y. Silk Conditioning Works. Spring	56.....	9-11-13 Mercer street.
N. Y. Steam Company.....	Nassau .563.....	16 Courtlandt st
N. Y. Stock Exchange.....	New....	Broad street.
N. Y. Stock Exchange.....	New ...	Broad street.
N. Y. Stock Exchange.....	New....	Broad street.
N. Y. Stock Exchange.....	New....	Broad street.
N. Y. Stock Exchange.....	New....	Broad street.
N. Y. Stock Exchange, Prest. } & Sec. Office.....	New....469.....	Broad street.
New York "Sun," No. 1.....	Nassau .354.....	Printing House square.
New York "Sun," No. 2.....	Nassau . 61.....	Printing House square.

The first time The New York Steam Company was listed in the telephone directory. It was in the issue of May 15, 1882, and the number was "Nassau 563"



pany of the City of New York, dated June, 1887, discussing the question of economical operation of that company's gas plants, stated: "Having a contract with The New York Steam Company, we purchase the steam for making our gas at about 75 per cent of what it would cost us to manufacture it; and we have dispensed with the old steam-making plant." The New York Steam Corporation at the present time supplies steam for various purposes to the Consolidated Gas Company of New York and its affiliated gas and electric companies on Manhattan Island, and The New York Edison Company, in turn, under a mutually advantageous arrangement, supplies from its Waterside and Fourteenth Street Stations steam to the New York Steam Corporation during the morning hours of cold days when the peak loads on the steam system occur and when the electric company has spare capacity due to the fact that its peak loads are in the evening.

The blizzard of 1888 had demonstrated the wisdom of having the generating stations situated near the waterfront to facilitate the transportation of coal, and in 1896, a new plant was erected on the north side of Fifty-ninth Street at the East River, replacing the plant at Fifty-eighth Street and Madison Avenue.

The Company's main office, originally located at 16 Cortlandt Street, was moved to 22 Cortlandt Street in 1882 and in 1888 to 2 Cortlandt Street, a building also having the address, 173 Broadway. The next move was to 143 Liberty Street and from there, in May, 1907, to 140 Cedar Street. In May, 1916, the principal office was established at the present location, 280 Madison Avenue.

On the night of April 7, 1899, on the eve of his departure for a vacation trip, Mr. Andrews met death in a sudden and tragic manner when his home at 2 East Sixty-seventh Street was destroyed by fire. In all, thirteen persons perished, including Mrs. Andrews (the sister of G. C. St. John), Mrs. St. John and her three young children. The St.

John family had come to New York for a short stay before joining Mr. and Mrs. Andrews in their contemplated trip. Friends recalled that Mrs. St. John had often expressed fear of being trapped in a hotel fire and for



Well trained fire horses were the pride of the community. This engine is dashing past the old Herald Building

OF WALLACE G. ANDREWS, AND MEMBERS OF HIS HOUSEHOLD WHO PERISHED.



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THE ANDREWS RESIDENCE AFTER THE FIRE.



W. G. ANDREWS



FREDERICK
ST. JOHN



ORSON
ST. JOHN



MRS.
G. B. ST. JOHN
AND
SON WALLACE



MRS. ANDREWS
FROM
PHOTO
BY
MORENO
& LOPEZ

GERMAN FAITH IN PRESIDENT M'KINLEY

Berlin Government Wishes to Contradict, through the Herald, Statements of English Papers That President's Words on Samoa Were Thought Apologetic.

SUCH ASSERTIONS ARE REGARDED AS MISCHIEVOUS.

It Is Expressly Stated That McKinley Is Believed to Have Intended to Express Only Sentiments of Loyalty to Provisions of the Berlin Treaty.

APPARENT BELIEF THAT HE WILL ADHERE TO THAT COMPACT.

[SPECIAL CABLE TO THE HERALD.]
The Herald's European edition publishes the following from its correspondent—
Berlin, Friday.—The German government, through the medium of the Herald, wishes to contradict the statement of the Standard and other English papers to the effect that President McKinley's remarks respecting the recent events in Samoa are regarded by this government as an apology.

That statement the German government takes as being mischievous, and it wishes it to be known in Washington that the words used by the President were interpreted here solely as sentiments of loyalty to the treaty of Berlin, and absolutely nothing else.

per cent of the products of that island and others near it.
"The United States is the natural market for the West Indies, and it is not likely that they will remain in their present isolated

places great value to the Philippines. It is opposed to giving up any part of the Philippines," he said. "I think we should be in them, by all means. The United States will develop an immense trade with those islands

ANDREWS AND ADAMS FIRES COST 13 LIVES

All the Members of Former Family, Who Were at Home, Met Death in the Flames the Only One Alive Being G. C. St. John, Who Was Out of Town.

HIS WIFE WAS FOUND CLASPING HER BABY IN HER ARMS.

She Died While Being Carried to House of a Neighbor, While Mr. and Mrs. Andrews, Two Grandchildren and Six Servants Succumbed in Other Parts of Building.

DARING RESCUE OF A WOMAN AT THE ADAMS' RESIDENCE

Thirteen persons perished and eight were injured in the fires which, as told in a late edition of the Herald yesterday, burst forth early yesterday morning in the residences of Wallace G. Andrews, at No. 2 East Sixty-seventh street, and Albert J. Adams, at No. 3 East Sixty-ninth street.

Of the fourteen occupants of the Andrews household only two escaped alive, and of these one is probably fatally injured. They were servants, who leaped from a fourth story window.

At the Adams residence, which caught fire while the other house was burning, set on fire either by a brand blown from the latter or by a curtain sent by the wind against a gas flame, one woman, for twenty-eight years the family housekeeper, lost her life. Six persons were injured here, while all the household had narrow escapes.

Twelve lives were lost in the flames which at two o'clock yesterday morning, swept through the handsome residence of Wallace

mystery as to their origin, and, again, in the large number of fatalities.
Returned from Trip to Albany.

A section of the front page of the New York Herald of April 8, 1899, which told of the death of Mr. Andrews, his family and servants, when fire broke out in his mansion during the night

that reason had accepted with a feeling of great relief the invitation to stay at the Andrews' residence during her sojourn in New York.

The prominence of the victims caused the newspapers to devote the greater part of their front pages to detailed accounts of the fire, the origin of which was never discovered, and the entire city was shocked by the enormity of the tragedy. However, the one who suffered the greatest loss was almost the last to learn of the disaster. Mr. St. John, returning from an overnight business trip, had neglected to read the newspaper he had purchased on the train that morning and so found it difficult to account for the number of friends at the station to meet him after so short an absence. But he learned the reason for their presence all too soon.

The outstanding place which Mr. Andrews had attained in the community was indicated by the distinguished attendance at the funeral and the list of pallbearers: Russell Sage, Colonel Robert G. Ingersoll, United States District Attorney Henry L. Burnett, James W. Hawes, W. J. Hitchcock, C. E. Orvis, Senator Thomas C. Platt, Horace A. Hutchins and H. S. Ford.

LATER HISTORY

Immediately after these tragic events, Mr. St. John was made President of The New York Steam Company. The responsibilities thereby placed upon him and the problems to be faced in securing a continued growth of the business were greatly increased by the terms of Mr. Andrews' will, which provided a large endowment for establishing a school at Willoughby, Ohio, where girls of limited means could receive a good grammar and high school education with special courses in domestic science. However, there was protracted litigation over the terms of the

will, and the school, known as the Andrews Institute for Girls, was not established until several years later. The endowment had to be provided very largely from Mr. Andrews' holdings in The New York Steam Company, and as a result, the school became the



Stages with iron-tired wheels rattled merrily over cobble stone paved Broadway



Wall Street in 1883

owner of the Company.

Because of the litigation and the conditions of ownership, it was difficult to arrange proper financing to provide for the expansion of the business, and Mr. St. John and the Andrews Institute had to rely largely upon the earnings from the business to provide for its growth, sacri-

ficing immediate income to the Institute in order further to develop the property. Thus, during a period of years, the growth of the business was of necessity limited. In 1907, however, construction of a generating station at Fifty-ninth Street and the East River, immediately south of the then existing station, was undertaken to provide for increased requirements in the uptown district, and relatively short extensions of the distribution systems in both the uptown and downtown districts were made from time to time.

During the several years following the final adjudication in 1911 of Mr. Andrews' will, limited funds were made available for extension of the service, but these in general were inadequate to take care of the various requirements which arose. The construction of a comprehensive system of rapid transit subways throughout the city necessitated the relocation of many steam mains, which seriously taxed the Company's financial resources. In 1914, the Public Service Commission, which had been given jurisdiction over the Company the previous year, instituted hearings with respect to the desirability of reconstructing certain old screwed flange steam mains in various parts of the city, using welded flange pipe, which gave promise of further retarding the immediate growth of the business. Nevertheless, Mr. St. John carried on until



Broadway south from Forty-second Street, 1881. Building in left foreground is St. Cloud Hotel—now the site of the Knickerbocker Building



Two views of Station B, the first plant of The New York Steam Company, erected in 1881 and demolished in 1926. It stood in the block bounded by Cortlandt, Dey, Greenwich and Washington Streets



January, 1915, when he retired and was succeeded as President by Arthur E. Duram.

During the two or three years following, in spite of many handicaps, a considerable growth in business was effected. The Burling Slip Station was erected in 1917 (since greatly increased in capacity), and the capacity of the Fifty-ninth Street Station was doubled. The modern trend toward boiler units of large size and high efficiency was indicated by the design of the Burling Slip Station which contained boilers of 2,000 horsepower capacity each, producing steam at 200 pounds pressure.

Extensions into new territory were of necessity limited, especially as reconstruction of certain steam mains was required under an order of the Public Service Commission. Additions to the distribution system were made in accordance with a new design of pipe structure and conduit. In this design, fittings, valves, expansion joints and lateral service connections were of extra heavy standard, suitable for operating pres-

tures up to 250 pounds a square inch. The tile walls of the conduit were supported on a heavy reinforced concrete base to which the main was anchored, and improved designs of pipe insulation and conduit drainage were provided. Consumers' service equipment, especially meters, also was improved as to design and quality of materials.

In accordance with a ruling of the Public Service Commission, all flat rate contracts for the supply of steam were changed into contracts under which charges were made for service in accordance with meter readings. In November, 1916, new rate schedules were placed in effect for various classes of service, embodying promotional rates for annual power purposes and apartment house usage, which have relatively high load factors.

A Commercial Engineering Department was formed for the purpose of solving heating problems and instructing the consumer in the economical use of steam. This department has since become an outstanding factor in rendering service.

However, with the price of fuel mounting rapidly during 1917, due to increased labor costs at the mines and greatly increased freight rates incident to the participation of the United States in the World War, it became necessary to devise some means whereby this increasing cost would be borne by the consumer, as would be the case were the consumer operating an individual boiler plant. On January 2, 1918, a supplement to the Schedule for Steam Service was put into effect, which provided for a credit or surcharge per thousand pounds of steam billed each month, based on the cost of coal to the Company during the preceding month. This Coal Cost Rate Adjustment was the forerunner of a practice later to be adopted by many utility companies in New York and throughout the country.

Although the Company, endeavoring to meet the problem of rapidly increasing costs of labor and material by corresponding increases in charges for steam, had secured permission from the Public Service Commission to moderately increase its rates and had inaugurated a coal surcharge,

A marvelous adventure at the beginning of the twentieth century was automobiling, although the cry of the bystander was "get a horse"—advice this lady and gentleman seem to be following





*Left, the Grand Central Terminal
in 1886; center, the train shed*



an adequate return on the investment unfortunately was delayed. With the high cost of money and following closely further unsuccessful attempts to provide adequate financial support, the Company found itself



Grand Central Depot, in 1906, before depression of the yards and construction of the new terminal

in a position where receivership seemed the best protection for the various interests concerned. In August, 1918, the Federal District Court appointed William C. Fitts, George F. Hurd and G. C. St. John, receivers, as a result of a mortgage foreclosure brought by the Andrews Institute for Girls. This apparent catastrophe had a most salutary effect, as it led to a reorganization which was the beginning of a new era of expansion and service.

The receivership lasted from August, 1918, to July, 1921. It was possible to arrange with two large banks in New

York City to take receivers' certificates, which, by the way, were paid at the time of or prior to their maturities. George R. Cottrelle of



*Forty-second Street and Park
Avenue in the days of han-
som cabs and cable cars*

THE DAILY GRAPHIC

AN ILLUSTRATED EVENING NEWSPAPER

39 & 41 PARK PLACE

VOL. XXIV.

All the News
Four Editions Daily

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\$12 Per Year in Advance
Single Copies Five Cents

NO. 2426



EXCELSIOR.

Father Time (after examining the plans for Municipal Improvements in 1880)—"TRULY THERE ARE GO-AHEAD PEOPLE: THIS IS A GRAND PROGRAMME."

Front page of the "Daily Graphic" of January 8, 1881, depicting New York's outstanding progressive undertakings of the day, including district steam service, left center of picture, which began in March of the following year



James D. Hurd

Toronto, Canada, and the receivers arranged this financing and were largely responsible for the successful reorganization which resulted in the formation of the New York Steam Corporation in July, 1921. Mr. Cottrelle and Mr. Hurd were elected Directors of the new Corporation.

James D. Hurd, previously an officer of the Guaranty Trust Company of New York, was made President of the new Corporation, and with characteristic enthusiasm, initiated a period of important expansion. The new Kips Bay Station was

built; the capacity of the Sixtieth Street Station was substantially increased by the installation of large new boiler units; provision was made for securing large quantities of steam at off-peak hours from the Waterside Station of The New York Edison Company, and expansion of the distribution system was undertaken, particularly in the uptown district, paralleling the large building development in the midtown area of New York City.

Charles A. Gillham, who had been a Vice President of the old Company and acted as manager for the receivers, Frank E. Pendleton, a Vice President of the old Company, and George S. Beith who as a young man joined the organization of Mr. Andrews and was Secretary and Treasurer of the old Company, also played important parts in the uninterrupted growth of the business before, during and after the receiver-



A quaint old picture of the southeast corner of Pearl Street and Burling Slip, now the site of the Burling Slip Station of the New York Steam Corporation

ship. As well as being Directors of the present Corporation, Mr. Gillham is now a Vice President, Mr. Pendleton is a Vice President and Chief Engineer, and Mr. Beith is Treasurer. Travis H. Whitney, a Vice President of the Brooklyn-Manhattan Transit Corporation, and Richard M. Hurd, President of the Lawyers Mortgage Company, also served as Directors of the Corporation for a number of years.

In August, 1922, the Corporation was refinanced through the sale by The National City Company, an affiliate of The National City Bank of New York, of \$5,000,000 First Mortgage Bonds and \$1,000,000 Preferred Stock. Allen G. Hoyt, then a Vice President of The National City Company and now a Vice President of The National City Bank of New York and of the City Bank Farmers Trust Company, and Frederick W. Jackson, of the law firm of Shearman & Sterling which acted as counsel for the Corporation, were subsequently elected Directors. Additional securities in connection with financing extensions of the Corporation's service have been issued from time to time. The most recent stock financing of the Corporation was in November, 1930, when 120,000 shares of Common Stock were offered *pro rata* to stockholders at \$50 a share, providing \$6,000,000. In March, 1932, \$8,700,000, principal amount, of 5% First Mortgage Gold Bonds were offered and quickly over-subscribed, notwithstanding unfavorable market conditions.

Including this issue of bonds, there are outstanding \$5,653,500, principal amount, of 6% First Mortgage Gold Bonds and \$22,159,500, principal amount, of 5% First Mortgage Gold Bonds; 100,000 shares of Preferred Stock of two series, paying dividends at the rates of \$7 and \$6 a share, respectively; and 360,000 shares of Common Stock, paying dividends at the rate of \$2.60 a share a year.

Another of the Directors of the new Corporation was David C. Johnson whose first position after graduating from Stevens Institute of Technology was as transitman in connection with the construction of the Astoria plant of a subsidiary of the Consolidated Gas Company of New York and who, with consulting engineering and investment banking firms, particularly The National City Company, had gained an extensive practical knowledge of public utility companies in this and foreign countries. During the long illness of Mr. Hurd, resulting in his death on June 23, 1928, Mr. Johnson was made a Vice President and acted as head of the Corporation, and in July, 1928, he was elected President.

Recently, the position of the New York Steam Corporation was still further strengthened through the acquisition by the Consolidated Gas Company of New York of about seventy-four per cent of its Common Stock. As a result, in 1931, George B. Cortelyou, President of the Consolidated Gas Company of New York, and John A. Garver, senior member of Shearman & Sterling, were elected Directors of the New York Steam Corporation. In March, 1932, Floyd L. Carlisle, Chairman of the Board of Trustees of the Consolidated Gas Company of New York, was also made a Director.

★ ★ ★ ★

Since the formation of the New York Steam Corporation in August, 1921, central station steam service in New York City has grown more rapidly than any other form of public service in the city, the expansion during the past five years alone exceeding the entire growth during the first forty-five years of its history. The notable rate of increase in gross and net earnings, in main extensions and in territory served, has been

made possible by a dependable service, steam being produced so efficiently and distributed to consumers at such low rates that the installation of private plants has become uneconomical.

The station capacity in 1921 was 1,600,000 pounds of steam an hour, supplemented by the original boiler plant in the downtown district, then held in reserve and at a later date entirely removed from service. The total generating capacity now available at the Corporation's plants, supplemented by steam supplies from The New York Edison Company, is in excess of 7,250,000 pounds an hour. Coupled with this growth of station capacity, there has been a marked increase in the efficiency of steam generation and distribution, evidenced by the fact that while ten years ago, 10,000 pounds of steam were delivered to consumers for each gross ton of coal burned, in 1931, 15,300 pounds of steam were delivered to consumers for each gross ton of coal burned.

While the connected load has increased nearly fourfold in the past ten years, gross earnings have increased but threefold, due to reductions in the rates charged for steam and a larger use at wholesale rates. The footage of mains and services in operation is two and one-half times the footage of ten years ago. This physical expansion has been paralleled by a continued development of organization and methods for the efficient purchase, testing and burning of fuel, for the efficient operation and maintenance of the distribution mains, services and consumers' equipment, and for the economical utilization of steam by consumers.

Distinct advances have been made in the design and character of materials used in the distribution mains, services and service equipment. Special copper and steel alloys have been utilized in expansion joints, main and service valves, in regulating valves, steam traps and other appurtenances. Distribution mains housed in underground tunnels or conduits have been made accessible at frequent intervals by the installation of manholes that have contributed substantially to a reduction in the cost of upkeep. A notable improvement has been made in the recording of steam sales to consumers by the further de-

*The annoyance of ash disposal
as depicted in a publication of
the eighties (obviated by district
steam service)*



velopment and uniform use of integrating and recording registers in connection with all consumers' meters. In 1923, a special form of steam control equipment was made available to consumers, which has contributed in a substantial degree toward an economical use of the steam. In fact, the Corporation may be considered a pioneer in the introduction of means whereby not only comfort but also the greatest degree of economy in heating may be secured.

Perhaps, when the history commemorating the one hundredth anniversary of central station steam service in New York City is written, it will include a description in greater detail of the many recent developments made by the New York Steam Corporation to improve the service and to effect economies. At the present time, however, even those improvements holding the greatest dramatic interest, such as the burning of small sized anthracite coal on chain grate stokers, the design and operation of powdered fuel boiler units with their accompanying ingenious equipment, the extensive employment of electrical accounting and tabulating machines for bookkeeping operations and analyses, and the use of devices for the electrical long-distance recording of steam pressures, which depend upon the action of photo-electric cells as affected by the varying intensity of light rays, would probably seem prosaic in this history which deals principally with the "Pioneers".



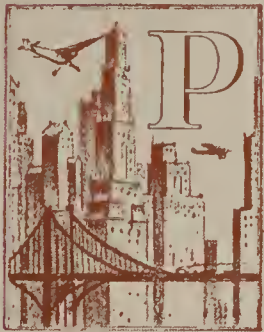
TODAY



DAVID C. JOHNSON
President



TODAY



PRACTICALLY every new tower building in Manhattan is in a sense a testimonial to the efficiency and reliability of the New York Steam Corporation's service. Most of the large buildings erected in recent years have no equipment for the generation of steam for heat and power, and many have no smokestacks.

The confidence which the New York Steam Corporation now enjoys has been earned by a record of fifty years of uninterrupted service, through winters of great severity, against the handicaps of traffic-paralyzing blizzards; through wars, coal famines and other catastrophes. It has been earned by constantly keeping abreast of the requirements of the community; by saving money for the consumer; by employing experts to help consumers effect economies in heating costs; by enabling



From barges in the East River gigantic steam shovels hoist the coal into the plants where it is translated into heat and power for the Metropolis

building owners to increase greatly their rentable space; and by valuable contributions toward the relief of traffic congestion and the improvement of public health, living conditions and civic beauty.

The New York Steam Corporation is today the largest district steam distributing organization in the world. Its financial success may be meas-

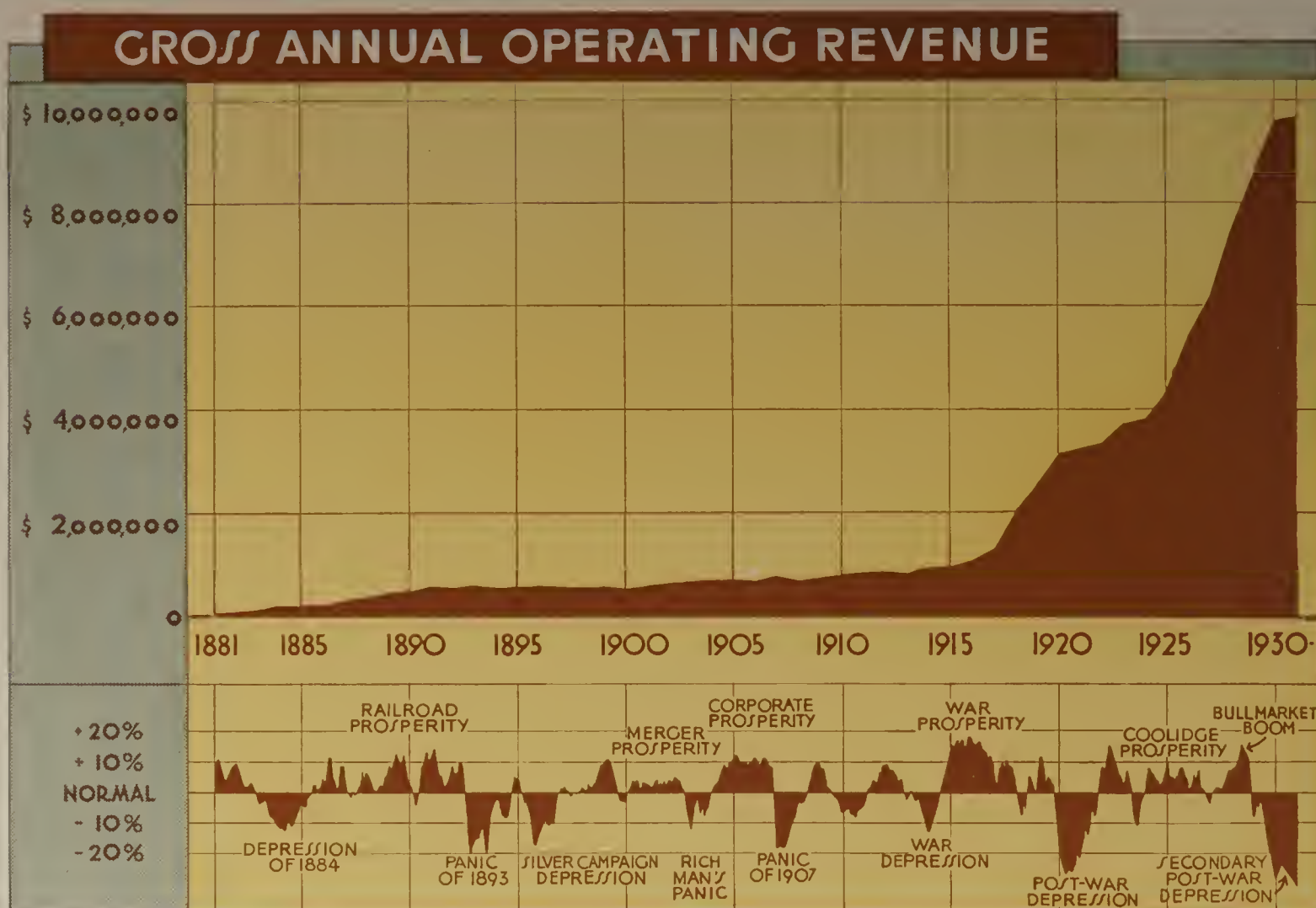
ured by the increase in earnings. Gross earnings have nearly tripled in the past nine years, from \$3,409,234 in 1922 to \$9,731,843 in 1931. Net earnings before provision for retirement reserve have increased nearly five times in the same period, from \$785,813 in 1922 to \$3,643,865 in 1931.

In recent years, the Corporation has extended its distribution system to include the districts of greatest building concentration. However, even now the territory served represents less than ten per cent of the total of Manhattan Island, the area covered by the franchise under which the Corporation operates. Steam is supplied to buildings having contents of about 2,200,000,000 cubic feet, of the total of approximately 14,000,000,000 on Manhattan Island. Thus, because of the large proportion of buildings supplied in the area now served, and the greater height of such buildings compared with the average, the Corporation supplies over sixteen per cent of the total building volume of Manhattan, and an even greater percentage of the steam requirements, due to the relatively greater demands. It is also of interest that there are more heat units in the total steam which the Corporation distributes in the limited area which it serves, than in all the electric energy supplied on the entire Island of Manhattan, and nearly as many heat units as in the gas distributed in Manhattan.

Whether steam is purchased for a fashionable Fifth Avenue home, a laundry along the river front, a large hotel, or a commercial building a thousand feet high, relatively small metering devices are substituted for cumbersome furnaces and boilers; coal hauling and storage and ash handling are eliminated; addi-



Installing one of the principal arteries of the steam system —a section of a 24-inch main



The gross annual revenue from the sale of steam in New York City has increased steadily during the past fifty years, despite depressions and booms as depicted in the lower chart devised by Leonard P. Ayres, Vice President of The Cleveland Trust Company and published here with his permission

tional rentable space is provided, and economies in heating costs are effected.

All the steam sold is metered, and bills are rendered monthly, in a manner similar to gas, electric and telephone services, based upon the thousands of pounds of steam utilized. Where steam is used for power or where the use during the non-heating season is relatively large compared with the use during the winter months, a special rate is available which takes into consideration what, in effect, amounts to a favorable yearly load factor.

About sixty-five per cent of the steam supplied is used for heating. The balance is used for hot water supply, cooking, refrigeration, power and industrial purposes. In restaurant and hotel kitchens it cooks the food; in

barber shops it heats the towels; in Turkish baths it supplies the heat that aids the rotund in their efforts to become slender. It does its part in the cleaning of building exteriors, helps in the blocking of hats and the pressing of suits, and even has a permanent place in grand opera, the fiery breath of the dragon in *Siegfried* and some of the most fantastic Wagnerian effects in *Die Walküre* and *Der Fliegende Holländer* being manufactured in a prosaic manner down at the Kips Bay Station along the East River front.

From its six sources of steam supply, the New York Steam Corporation furnishes steam through an extensive distribution system to about 2,500 buildings in New York City, ranging in size from three story residences to the largest building in the world—the eighty-five story Empire State Building with its tremendous height of 1,252 feet and total volume of 36,000,000 cubic feet. Among the important buildings now supplied entirely by the New York Steam Corporation, or under contract, are:

- Grand Central Group of Buildings
- Empire State Building
- Chrysler Building
- Lincoln Building
- Irving Trust Building (No. 1 Wall Street)
- Bank of Manhattan Company Building
- City Bank Farmers Trust Company Building
- Sixty Wall Tower (Cities Service Building)
- Daily News Building
- Times Building and Annex
- Tudor City Group of Buildings
- Pennsylvania Station and Hotel
- United States Government Buildings
- Rockefeller Center (Radio City)

There are over twenty-five buildings in the Grand Central group, including the Grand Central Terminal, the New York Central Building, the Graybar Building, the Grand Central Palace, the new Waldorf-Astoria, Commodore, Biltmore, Roosevelt and Park Lane Hotels, and many other office buildings, hotels and apartments. About 1,250,000,000 pounds of steam annually are required for this group alone. After a thorough study of the dependability of New York Steam Corporation



The Kips Bay Station, with a capacity of 2,450,000 pounds of steam an hour, is the largest and most modern central station steam generating plant in the world

service, The New York Central Railroad Company demolished its two boiler plants which had previously supplied the steam requirements of this group.

Recently, The Pennsylvania Railroad Company contracted with the New York Steam Corporation for the entire steam requirements of the Pennsylvania Railroad Station, the Pennsylvania Hotel and the Service

Plant. The Railroad Company has discontinued the operation of its high pressure steam plant, believed to be the largest isolated plant in Manhattan.

A further indication of the implicit confidence which architects and builders have come to place in the New York Steam Corporation's service is the fact that the Corporation will supply the entire steam requirements of Rockefeller Center, frequently referred to as Radio City, the greatest building project in the history of the world, involving \$250,000,000 of property.

One of the first United States government buildings to be supplied by The New York Steam Company was the Post Office Building at Broadway and Park Row. In August, 1931, an agreement was reached with the United States Treasury Department for the supply of steam to all existing and contemplated federal buildings on the lines of the Corporation. Generating plants in present buildings will be abandoned and omitted from future ones. The buildings to be supplied with steam, ultimately requiring 500,000,000 pounds of steam a year, include the new Parcel Post Building, the Pennsylvania Post Office Building, the Federal Court House and downtown Post Office, the Subtreasury Building, the proposed annex to the Pennsylvania Post Office, the Custom House, the Government Warehouse, the new Assay Office Building, the proposed Federal Court Building, the proposed Federal Office Building, and the Appraisers' Stores Building.

MASS PRODUCTION

The steam generating stations are located on the outskirts of the congested areas of Manhattan, adjacent to or on the waterfront.

The Corporation has at present available a total maximum capacity of over 7,250,000 pounds of steam an hour, including over 2,000,000 pounds from the Waterside and Fourteenth Street Stations of The New York Edison Company. Some idea of the energy in such a quantity of steam may be gained

A glimpse into the bottom of one of the mighty furnaces where the terrific heat of blazing pulverized coal converts water into steam almost instantaneously





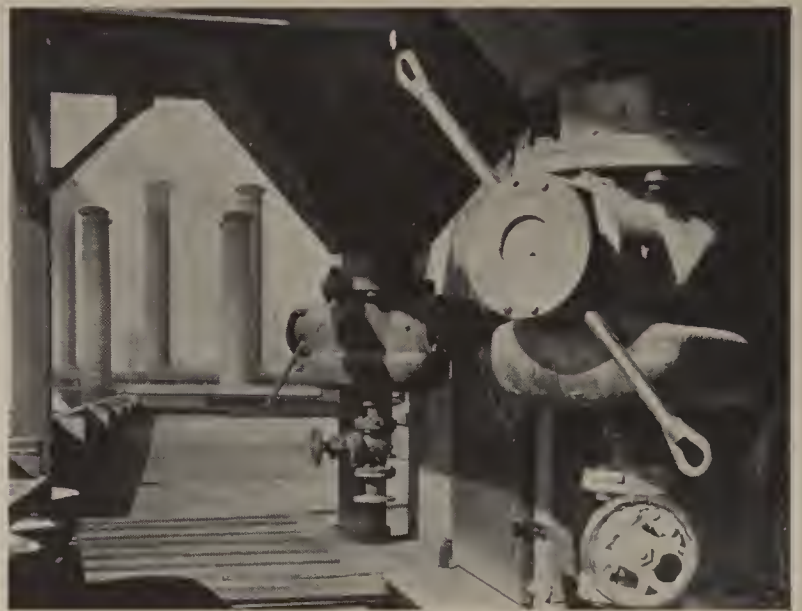
Miners of Manhattan—compressed air drills are used in cutting trenches through the solid rock in extending the steam service



Night and day the work of extending the steam mains goes on. This is a typical night scene showing workmen lowering a pipe



A corps of chemists is constantly on the alert, testing both the water and the coal used in steam generation



On the roof at the Kips Bay Station—valves controlling the discharge by suction of cinders to basement



A preliminary stage in the laying of large steam mains for the distribution system



Insulated with asbestos and mineral wool and enclosed in cast iron or concrete housing

from the fact that it would drive continuously at full speed, 250 railroad trains of the size of the Twentieth Century Limited. To make another comparison, if the steam generated during a cold day last winter were delivered at ten pounds pressure into a pipe twelve inches in diameter, the pipe required would be long enough to be wrapped sixteen and one-half times around the earth at the equator.

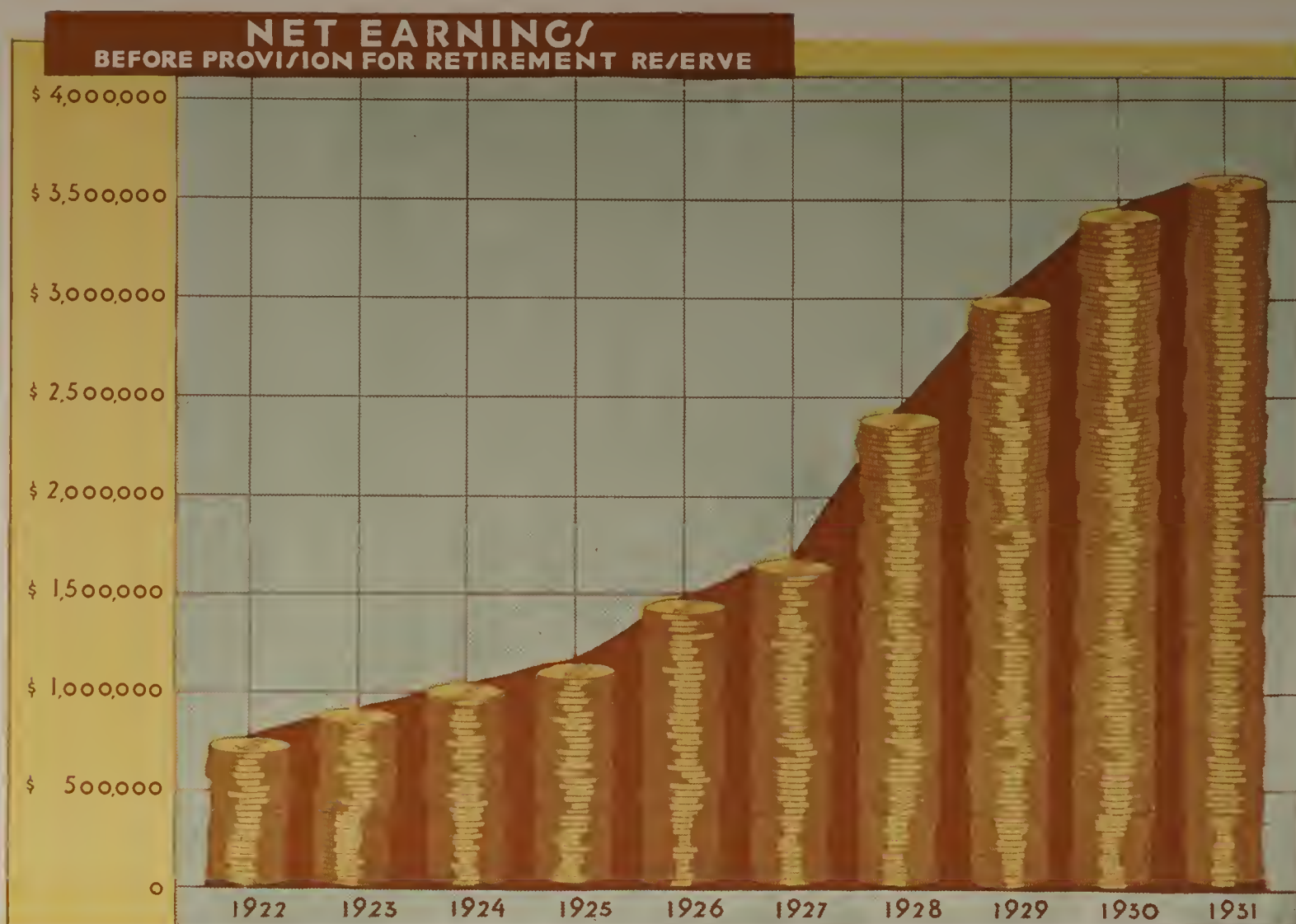
The largest plant of the Corporation is the Kips Bay Station occupying an entire block on the East River between Thirty-fifth and Thirty-sixth Streets. It has a capacity of 2,450,000 pounds of steam an hour. Sufficient additional space is available for the enlargement of this station to a capacity of 7,000,000 pounds of steam an hour. Powdered bituminous coal is burned under the boilers which together with their equipment are of the most modern and efficient type. During the past year, one of the boilers generated the largest quantity of steam ever produced by a single boiler for a like period. The turbo-electric generators, used solely to provide energy for operating the auxiliary equipment in the station, have a capacity of 13,000 kilowatts, sufficient to supply the electric requirements of a small sized city. One of the seven coal pulverizing mills has a capacity of fifty tons an hour, substantially greater than any other similar mill in the world.

Next in importance is the Burling Slip Station, which is located near the financial district. This station was enlarged early in 1930, and now has a capacity of 1,800,000 pounds of steam an hour. It is one of the largest and most efficient anthracite coal burning steam plants in the country.

The Corporation also has two stations located at Fifty-ninth and Sixtieth Streets on the East River, each having a capacity of 400,000 pounds of steam an hour. While used principally as peak load stations and operated only during the winter months, these stations give very satisfactory results and produce steam at low cost.

Moving an intersection fitting is a man-sized job. (With permission of the New York Steam Corporation, this picture, in a page advertisement entitled "Let's Pull Together," appeared in several hundred newspapers in carrying out the program of the Reconstruction Finance Corporation.)





Dependable service has resulted in steadily increased earnings for the New York Steam Corporation

To these several large steam generating plants, fuel is brought by rail and water from the distant coal fields. Here, under the supervision of experts, about 800,000 tons of coal a year are prepared and then efficiently burned. Large as is this quantity of coal, it is less than two-thirds as much as would be consumed were individual plants to be operated in the buildings now supplied. In that event, at least 1,200,000 tons would be burned. The furnaces in the Corporation's plants are mechanically fed; otherwise the very smallest would require eight men laboring mightily to keep it satisfied. In the largest furnace, a ten room house could be placed bodily, with space to spare. Over the furnaces and extending to the height of a ten story building, are the giant boiler units converting water into steam. The steam from the smallest boiler at the

Kips Bay Station would keep five Empire State Buildings warm on the coldest day. The largest boiler produces enough steam to keep a dozen such buildings warm during the coldest winter.

While thousands of tons of coal are burned each day and millions of pounds of steam are produced each hour, noise, usually associated with large scale operations, is absent, and there is only the orderly undertone of the beehive. The scale of the units is so large compared with the individual-building boilers replaced, that the number of men in each plant is impressively small. Remote mechanical and electrical control is utilized to the economic limit, so that one man regulates many distant machines according to the messages of his instruments. The technique of the men who operate the giant boilers has developed with the growth of the units. They are no longer equipped with only the brawn necessary to swing a scoop of coal into a white-hot furnace and the ability to select the hollow spots in the fuel bed. They now must have the keenness to translate the slightest flicker of the pointer on any of a number of instruments into the action required to increase or decrease the air, coal or water supplies, and to know the effect of each constituent of the water named in the chemist's report.

Among the present employees, are many who served with the original company during the time of Wallace C. Andrews. The changes in operation that have been introduced since the days when the boilers were fired by hand, have not bothered these men; rather their continuous endeavors for improved efficiency and reliability have often led them to propose many recently developed improvements. Once, however, a chief operator who had just received new forms for the reporting of statistical data, complained rather forcibly against the increase in clerical work involved. In the "good old times", he had reported on a scrap of wrapping paper the tons of coal burned and the number of men employed each day.

Meters that measure the amount of steam taken from the Waterside Station of The New York Edison Company





In the shadow of the great Queensborough Bridge, are two generating stations of the Steam Corporation

To one familiar with the development of large scale business operations, this detailing of statistical records, if not overdone, is an important advance in the growth of any industry. Each class of expenditure eventually becomes sufficiently important to warrant its separation from some group, and thereafter it is designated by an individual account number. In this way, station reports have developed from the "scrap of paper" stage to a series of forms which permit the detailed study of production costs. Much of the bookkeeping and analysis of records is now being done by machines that are almost human.

To generate steam for the peak load, the plants require over 5,500,000 pounds of water an hour, which is about the average hourly water consumption of the entire city of Springfield, Massachusetts.

The Corporation uses drinking water in its boilers—the same as that supplied in all parts of the city. But this water is not pure enough to free the operators from the necessity of increasing their knowledge and vocabularies to meet the requirements of mass production and distribution of steam. Each operator knows that the all-embracing term "hardness, temporary or permanent" is not sufficiently detailed to tell him what to expect in his boilers. He must know the "pH" value of his feed water several times each day. He asks



Unsightliness and traffic disturbance are reduced to a minimum in laying mains today as compared with the 1882 scene (right) from Leslie's Weekly



THE LIFE OF THE METROPOLIS DEPENDS O



*And the voracious and ever-increasing steam demands of Manhattan will
have been for the last fifty years,*

PERPETUAL SUPPLY OF POWER AND HEAT



CURTISS-WRIGHT FLYING SERVICE Photo Div.

*mighty forest of skyscrapers are steadily being met today, as they have
central station steam service*



The New York Central Building, spanning Park Avenue, is supplied by the New York Steam Corporation

whether the “sulphate ratio” is high enough to protect the steel tubes and drums from the insidious attack of “embrittlement”. To protect his boilers and pipes, he operates the vents and condensers on his water

heaters in such a manner as to keep the “oxygen content” at a minimum

Insurance against all potential interruptions must be provided. A study of load curves discloses that the electric utilities experience the greatest demand of the year in that period of least daylight and greatest festivity, just before Christmas, whereas the Steam Corporation’s annual peak demand appears in the latter part of January when the stored heat and radiant energy supplied by the sun are lowest. Furthermore, the daily peak demand for electric energy generally occurs in the dusk of the evening, while that for steam occurs during the morning hours when the day’s work commences. This diversification of loads permits The New York Edison Company to supplement with its off-peak capacity New York Steam Corporation’s own supply of steam. Friendly, mutually advantageous arrangements for greater public service are thus possible.

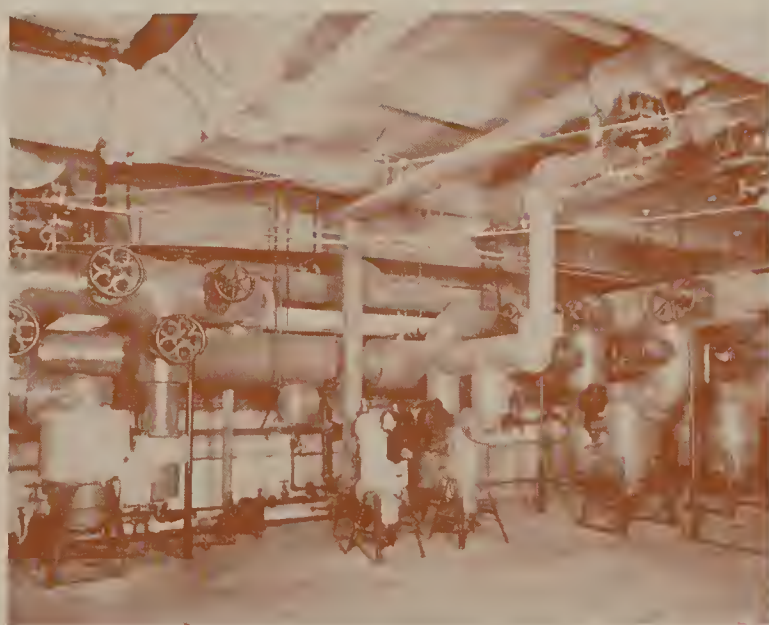
RAPID DISTRIBUTION

As the city awakens to begin the day’s activities, steam is demanded from all points of the large distribution system, but there is no excitement in the stations—the operators are intent on their actions, but otherwise one would not realize that within an hour the demand for steam will triple or even quadruple. A button is pressed—perhaps another—then the pitch of the orderly undertone rises slightly, making us conscious of the increased power developed. Unless an operator opens an inspection door to observe the fire, the white-hot furnace flames remain invisible behind refractory and water-cooled walls. The steam produced rushes out of the stations through the carefully laid pipes to the various buildings to warm and prepare them for the approaching army of workers.

In the boiler-free basements of twenty-five hundred smokeless buildings, this fluid—steam—presses against the restraining valves, eager to expand into the heating systems, the cooking utensils, the laundry machines or the engines, and there to give up its energy to satisfy the demand for service.

The layman is only vaguely aware that there are structures other than subways beneath the

*The modern substitute for great
boilers and coal bins—steam meter
installation in the Bank of Man-
hattan Building*



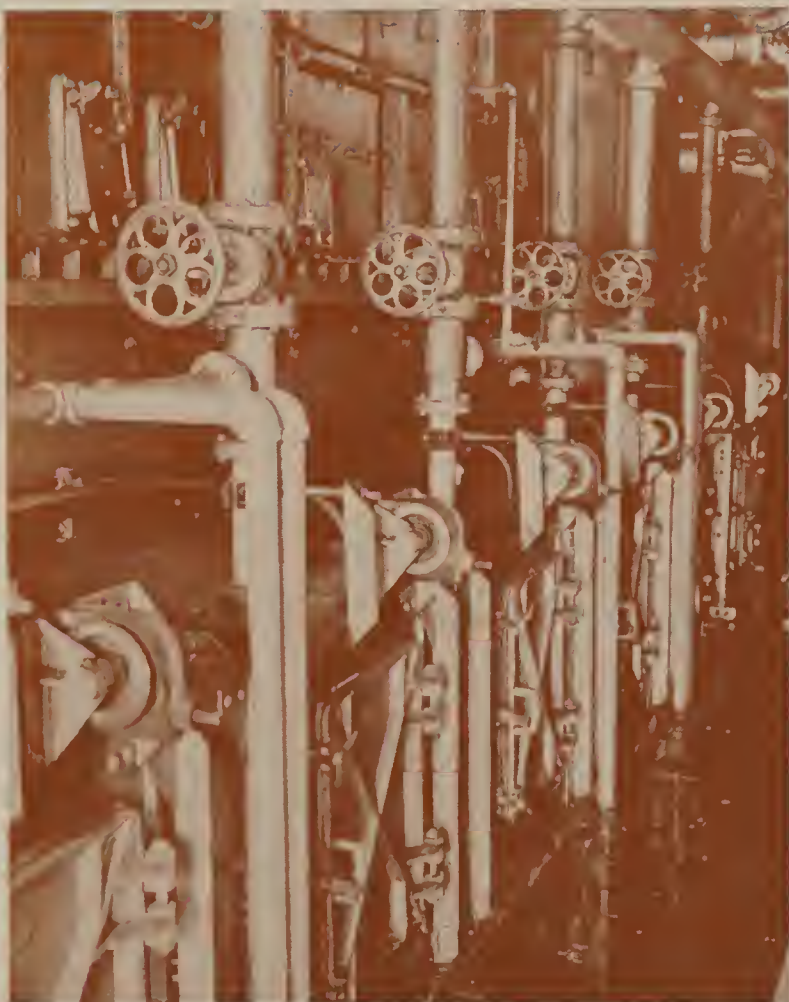
street level of New York City. He does not usually stop to consider that the workmen laboring in groups beneath the surface must so conduct their work as not to interfere ever so slightly with the many other pipes, conduits and wires in the acutely congested underground. To the engineer, familiar with the forces exerted by the several services, the solution of the problem of supporting the heavy loads while working in a confined space underneath, assumes the aspect of an outstanding accomplishment.

To illustrate, railroad tunnels are no higher nor wider at many points than is necessary, and the clearances are such that settlement of the tracks cannot be permitted. Tunnels for steam pipes have been driven under such railroad tunnels while train movements have gone on uninterrupted. Such problems are being solved almost daily, without publicity, but with the conscientious attention of a comparatively few engineers.

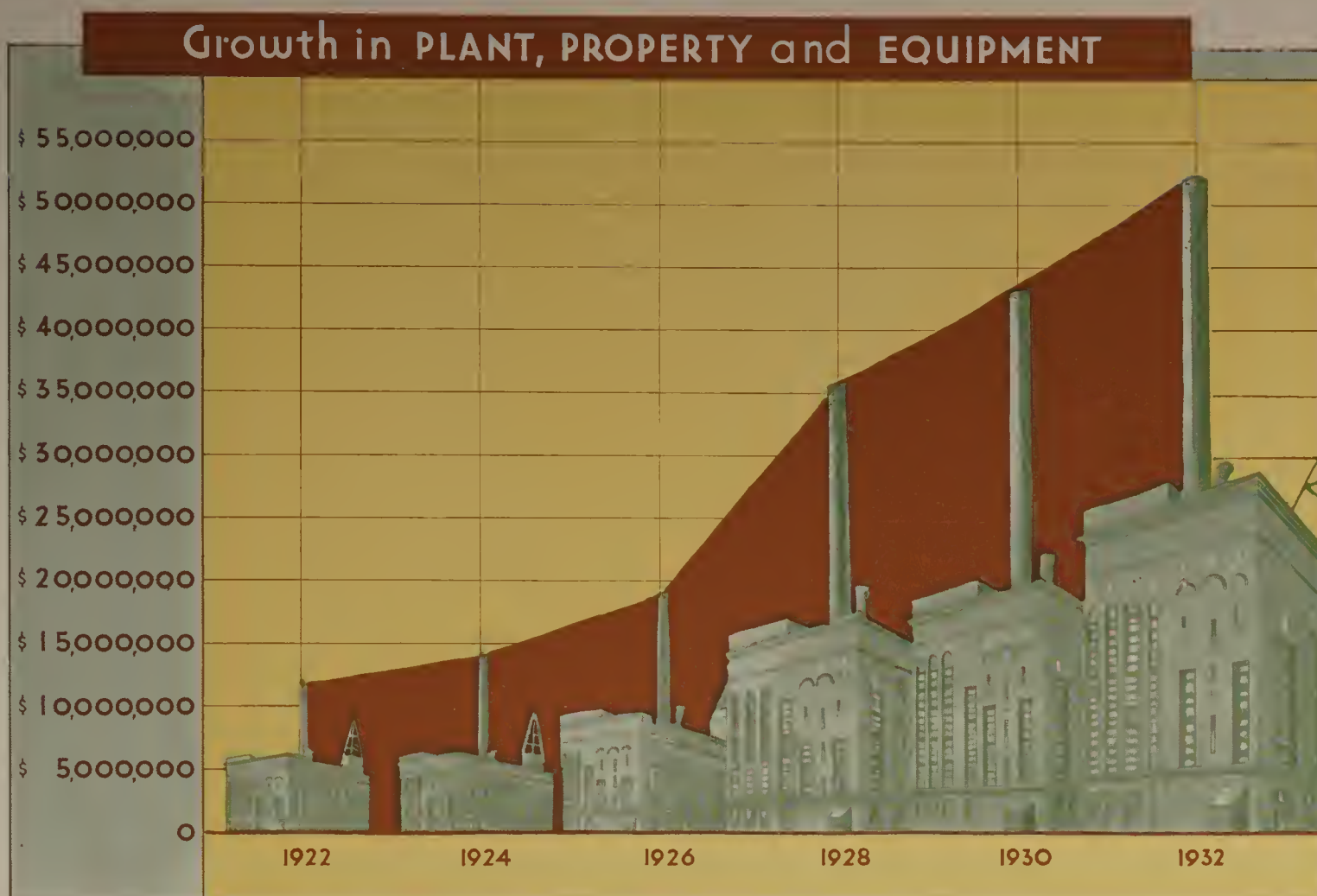
Only when workmen are digging the underground trenches in which the mains are to be laid, may we catch a glimpse of the mighty pipes of steel through which the steam rushes at rates up to 200 miles an hour. The forces which are to be controlled are appreciated when we see the massive pipes necessary to direct and confine the fluid over and under subways and car tracks; over, under or around the many busy pipes, conduits and other subsurface structures; through tunnels of rock and concrete, and finally, after causing it to make many turns and detours, to lead it, restrained, to the consumer's door.

There are now sixty-five miles of steam pipe under the streets of Manhattan, grown from the one-half mile first laid by Emery.

An uninterrupted supply is the controlling factor in the design of the mains through which the steam is conducted to the consumers. The territories served are gridironed with subsurface steel pipes, each functioning in its proper sequence as a feeder main, a lateral connector or a gridiron supply main. After years of experience with the unbelievable congestion

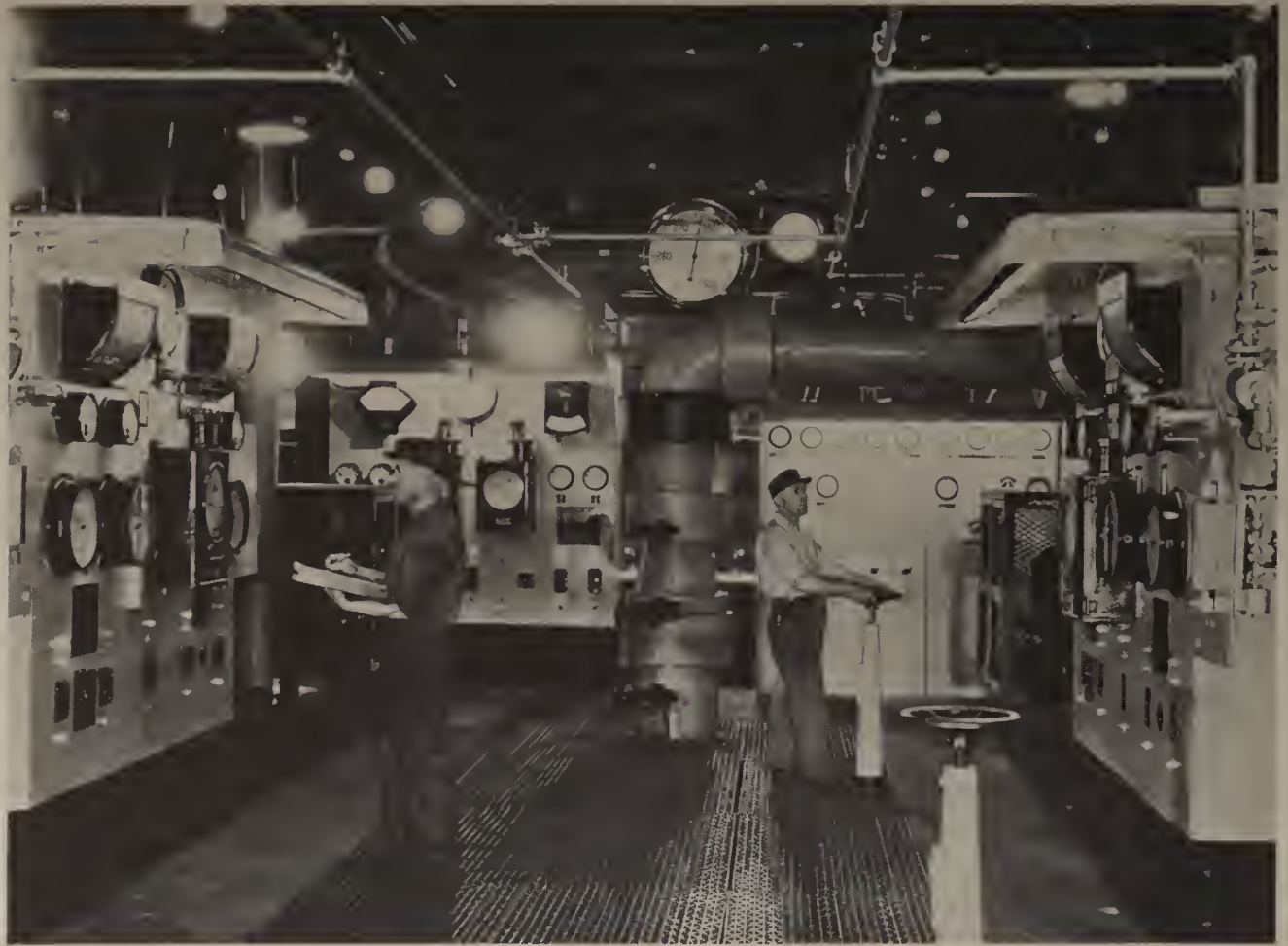


Insatiable thirst have the great water-drinking boilers of the steam generating plants. This picture shows the water piping to the ash sluices



A chart that tells the story of growth to meet a constantly increasing demand

of underground New York, the feeder mains have been standardized at twenty-four inches in diameter, this being the largest size of pipe which, with its necessary housing, can be conveniently installed without unreasonable expense. Manhattan's broadest thoroughfares cannot carry more than two or three, because of other underground services already installed at various depths. These feeders form direct links with the power plants and a number of laterals. The pressure in the network becomes more stable the greater the number of well distributed points at which feeder mains support the demand, so that further security of service is obtained by dividing the generating capacity among several stations along the length of the network. By proper valving, a multitude of paths are available along which the steam may be made to flow to each section of the city, and the proper pressure continuously maintained for each consumer.



In the control room at the Kips Bay Station

Each main is laid carefully on its bed of reinforced concrete. Walls of masonry on both sides of the pipe, support the reinforced concrete roof. Between the concrete and masonry of the tunnel and the pipe, are packed layers of asbestos and mineral wool to conserve the heat in the steam. The whole tunnel-like structure, about five feet square, extends from manhole to manhole, and at numerous points, traps collect and remove any moisture that may have formed in the pipe. The ponderous force of expanding steel has yielded to the cunning of the engineers—in each one hundred and fifty foot section of this network of mains are placed two bellows-like copper tubes which are compressed or expanded by the contraction or expansion of the main on either side. Thus, by anchoring the pipe between the copper sections, the almost irresistible forces of the expanding steel are so directed that they become harmless.

In the summer, when the stations send out about 1,000,000 pounds of steam during each of the morning hours, only a small amount of energy



*The world's largest building project—Rockefeller Center—which will be served by
the New York Steam Corporation*



Interior view of the Kips Bay Station, showing some of the coal pulverizing equipment

is required to move the mass. In winter, however, the steam must move rapidly in order that the pressure at distant points in the network remain constant, though the demand reach as high as 5,500,000 pounds an hour.



Interior view of the Burling Slip Station, showing the chain grate stokers by means of which small sized anthracite coal is burned

These distant pressures are electrically communicated, automatically and continuously, to the stations over private wires by sensitive gauges embodying the latest developments of the instrument maker's art, so that the operators may vary the pressure at the stations, up or down, to keep it constant at the distant points. The pressure at the station may rise even to 175 pounds a square inch in winter in order that a distant gauge may continue to read 130 pounds.

At the premises of each consumer, meters and reducing valves are installed in order that the amount of steam used may be accurately recorded and the pressure required by the consumer maintained. For ordinary heating and hot water purposes, the main pressure is reduced to from five to fifteen pounds a square inch; for cooking, slightly



An expert determining the qualities of coal before it is used in the plants



Mid-Manhattan, east from Tenth Avenue. Lower right is the Pennsylvania Station. The clearing, upper left, is for Rockefeller Center



Lower Manhattan. Burling Slip Station of the New York Steam Corporation, indicated by arrow



Looking north toward Central Park. This district includes the Empire State and Chrysler Buildings and Rockefeller Center



Mid-Manhattan from the East River to the Hudson with arrow indicating Kips Bay Station



Fifteen years of building progress near Fifty-ninth Street and Fifth Avenue. The new towers (left to right) include the Hotel Pierre, Savoy-Plaza, Squibb Building and R C A-Victor Building

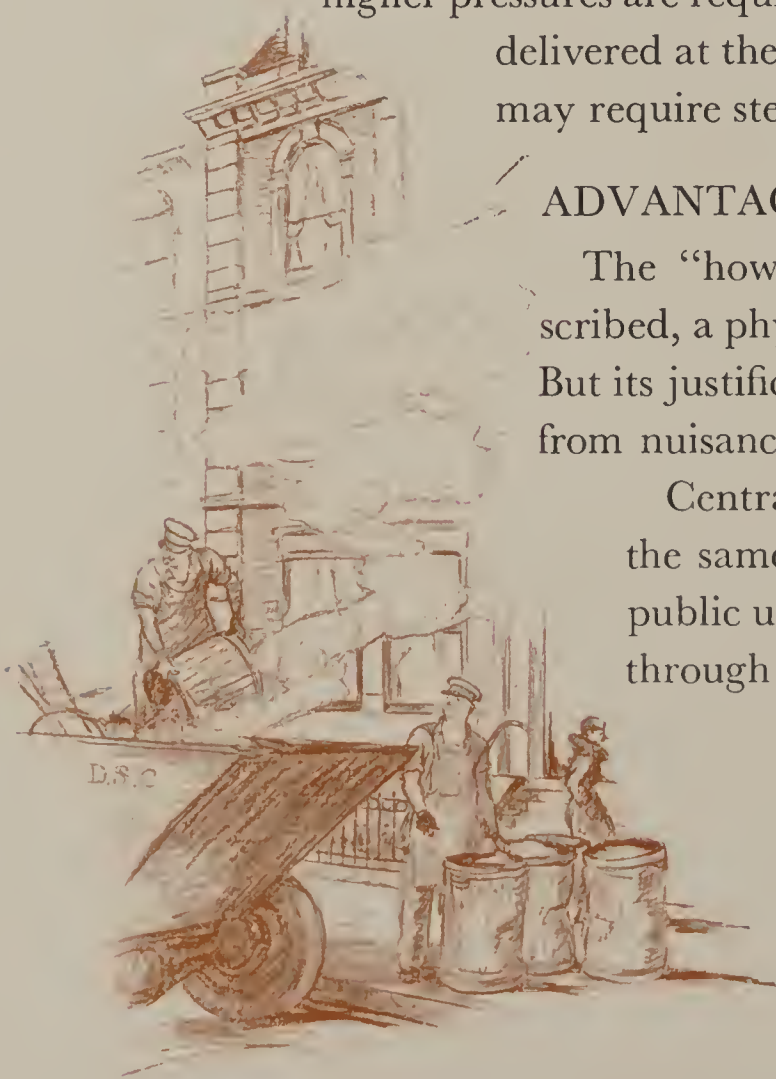


higher pressures are required; while for power purposes, steam is usually delivered at the pressure in the street mains. Large buildings may require steam at several pressures.

ADVANTAGES OF THE SERVICE

The “how” of central station steam service is, as described, a physical matter of coal, water, steel and concrete. But its justification is found in healthful conditions, freedom from nuisance, and mutually profitable contracts.

Central station steam service is logical—it supplies the same urgent economic demand that has impelled public utilities to supply water, gas and electric energy through great central systems. The story of these

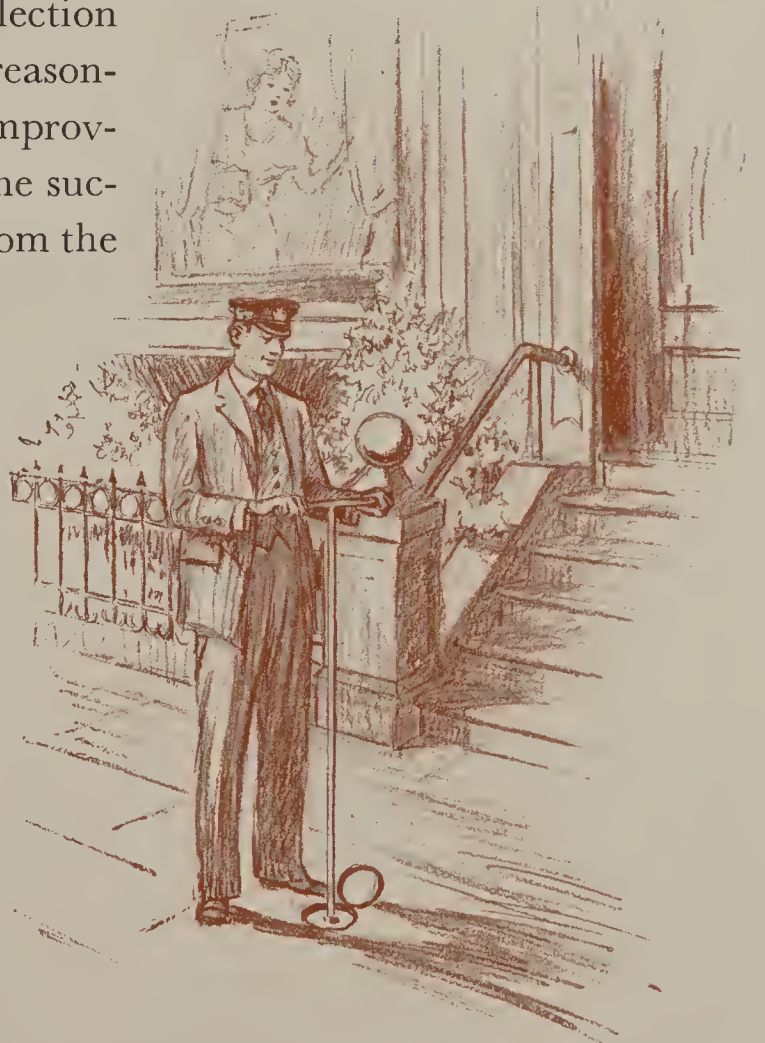


The old way—clouds of ash dust, clatter and traffic congestion resulting from individual heating plants



On the job twenty-four hours a day. A night view of the Kips Bay Station

successful enterprises is written in chapters of vision, cooperation and economy. Careful planning for the future, timely increases in the size and efficiency of production units, the proper selection of locations for plants and distribution systems, reasonable rates, and a constant watchfulness toward improving the quality of service—all are essential. The success of steam service in New York has resulted from the application of these principles. The economies of mass production and distribution have enabled district steam service to compete successfully with the operating costs, including capital charges, of isolated plants. Where existing boiler plant facilities are to be removed and the space thus made available is to be rented, the opportunities for actual savings are even more

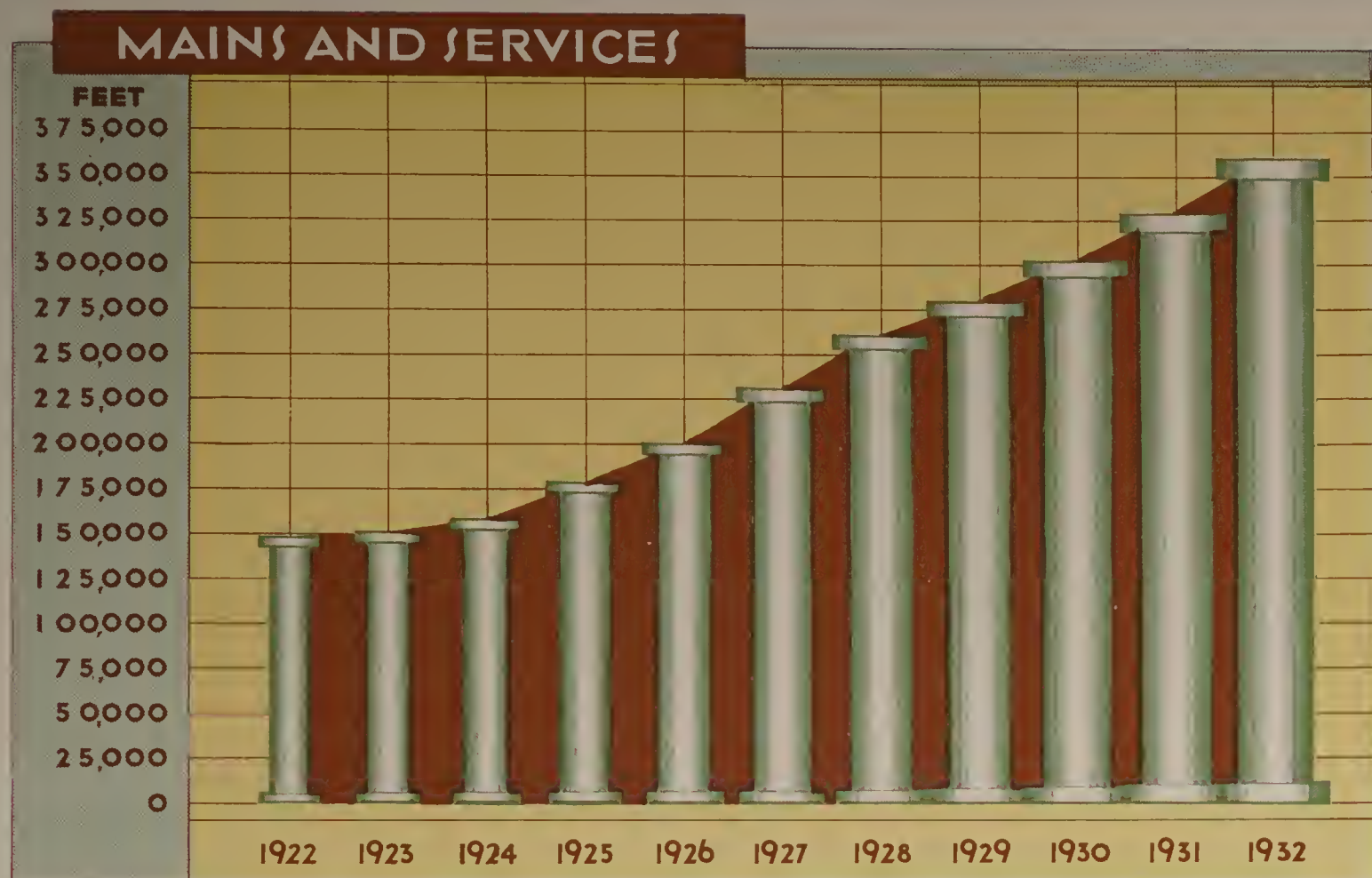


The new way—you buy your heat as you do your gas and water. This and the drawing on the opposite page were made from an early leaflet published by the Steam Company



Unloading a coal barge at the Kips Bay Station

evident. In congested areas, the demand for basement space is frequently great. When it becomes necessary, as it eventually must, to expend considerable sums on maintenance of equipment in isolated plants, the fixed costs of the additional investment frequently make the



Beginning with one and one-half miles, the Corporation now has sixty-five miles of steam pipe under the streets of Manhattan

economy of central station steam service more obvious, even in areas where basement space is not in demand.

In the design of a new building, it is now impossible to justify the installation of an isolated plant where central station steam service is available. The reasons are many and affect the building design from its deep foundations to the very roof of its skyscraping tower. The excavation, where boilers are omitted, need not be so deep, and where rock is the base for the foundations, the item of expensive rock excavation is of much importance. The foundations of the boilerless building are not complicated by the question of concentrated loads of boiler room equipment.

Space does not have to be provided for the storage of coal or ashes in the building using central station steam service, and provision for their handling need not interfere with the

Each main is encased carefully in a housing of asbestos, mineral wool and concrete to prevent loss of heat





MORE THAN 2,500 OF THESE BUILDINGS ARE SUPPLI

Two remarkable skyline views of Manhattan taken especially for this book, the upper one from the top of a tower of the Brooklyn Bridge, and the lower one from a tower of the Queensborough Bridge at 59th Street





BY CENTRAL STATION STEAM HEAT AND POWER

Most of these modern tower buildings are in a sense testimonials to the efficiency and reliability of New York Steam service, for they have been erected without provision for individual heating plants





Power and heat aplenty, but not a chimney in sight—looking south on Park Avenue with St. Bartholomew's Church in the foreground; the new Waldorf-Astoria, with the tops of the Chrysler and New York Central Buildings also visible



A view from the East River—the Corporation's two steam plants at the base of the Queensborough Bridge in Manhattan

most advantageous arrangement of the available space. The problems of power plant engineering need not enter into the architect's plans in any way, nor are boilers and other equipment purchased when central station steam is used. On no floor from basement to roof, is space set aside for a smokestack in the boilerless building, and the rental value of such space in a tower building is often equal to a large part of the annual steam service charge.

The intangible reasons for the use of steam service today are many, although sometimes the connections with business efficiency seem remote. But the reduction of the smoke nuisance, the maintenance of uniform, controlled temperature, the absence of dust caused by coal and ash handling, and the decrease in traffic con-



The New York of the future as envisioned in 1881 by the famous cartoonist, Thomas Nast



A TWELVE YEAR GROWTH IN TOWER BUILDINGS

These two pictures, taken from the same spot in Forty-second Street west of Broadway, the upper, twelve years ago and the lower, today, show the remarkable building development in the district east of Sixth Avenue to the East River and from Forty-first to Fifty-ninth Streets, in that period. In this area, the buildings, most of which are supplied by the New York Steam Corporation, require over 4,500,000,000 pounds of steam annually. Among them are 505 and 515 Madison Avenue, Columbia Broadcasting Building, 444 Madison Avenue, Empire Trust, R C A-Victor, Waldorf-Astoria, Fred F. French, New York Central, Bank of United States, Lefcourt-National, Graybar, 500 Fifth Avenue, Chrysler, Tudor City, Daily News, Chanin and Lincoln Buildings





Tudor City, heated by the New York Steam Corporation. From an etching by E. H. Suydam



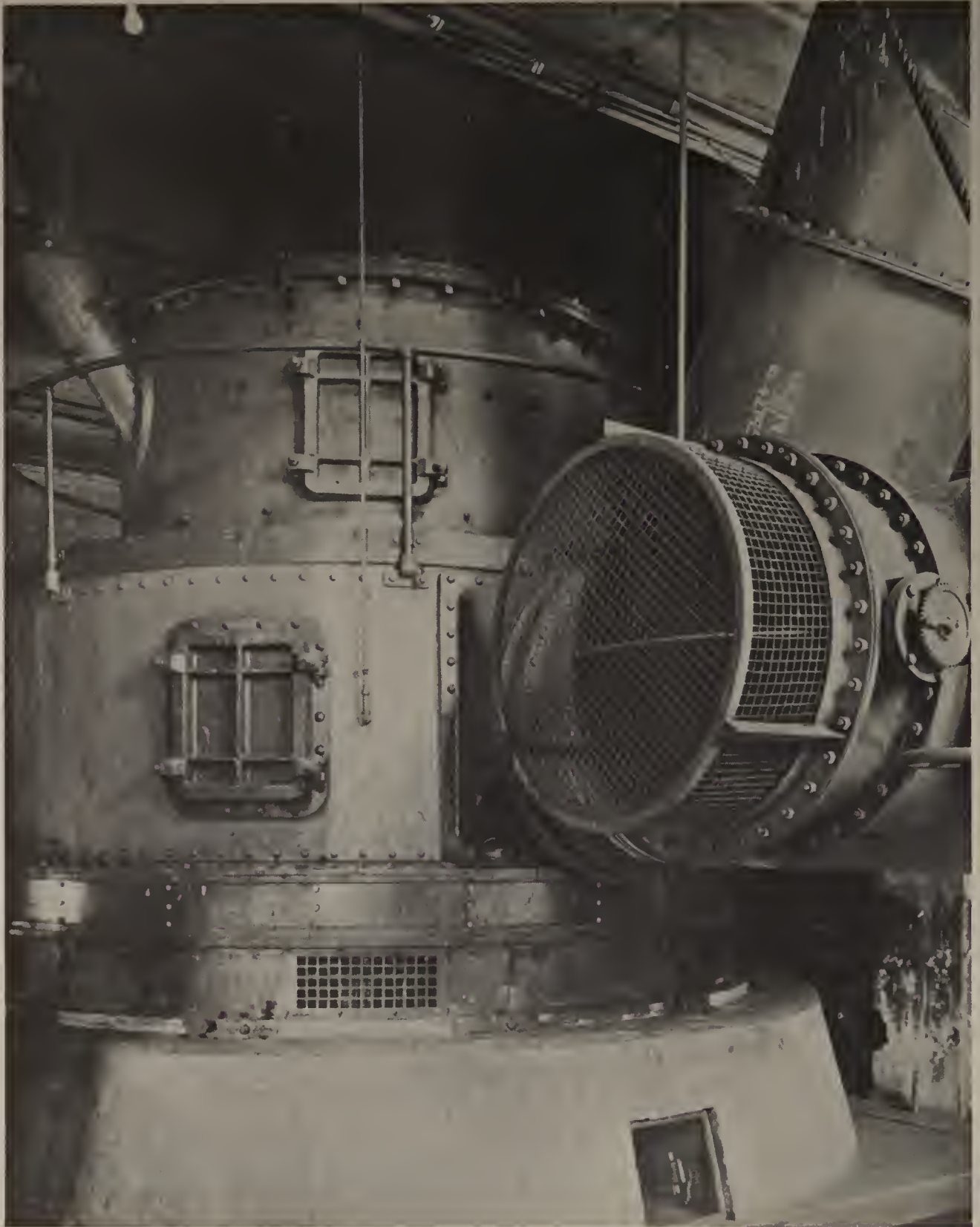
The Burling Slip Station of the New York Steam Corporation. Its capacity is 1,800,000 pounds an hour

gestion, all are factors which directly benefit public health and, therefore, promote efficiency.

If the energy, inconspicuously transmitted in the form of steam under the traffic-crowded surface of New York's streets, were to be produced in isolated plants in buildings, one thousand additional dust-producing cart-loads of coal and ashes to and from such plants would further congest the traffic each day.

Even the opening of a tiny ash pit door gives a hint of the tremendous heat within the boilers





The largest coal pulverizing mill in the world, one of seven mills at the Kips Bay Station



Mighty servants of civilization—outgoing mains from the Kips Bay Station

INFLUENCE ON ARCHITECTURE

Since the dawn of civilization until recently, the chimney was considered an indispensable feature of every habitable building. From plain utility, the chimney advanced in artistic importance until by some schools of architecture it was seized upon as a special object for ornamentation. In many cases, it was the chimney or chimneys that gave character to the building. And this was rightly so, for the gathering of the family about the hearth typified the true spirit of home, and the chimney became the outward expression of what the hearth signified.

Although sentiment usually has no place in the design of office buildings and hotels, chimney requirements were as important here as in the cottage. And as business buildings increased in size, the space that had to be used



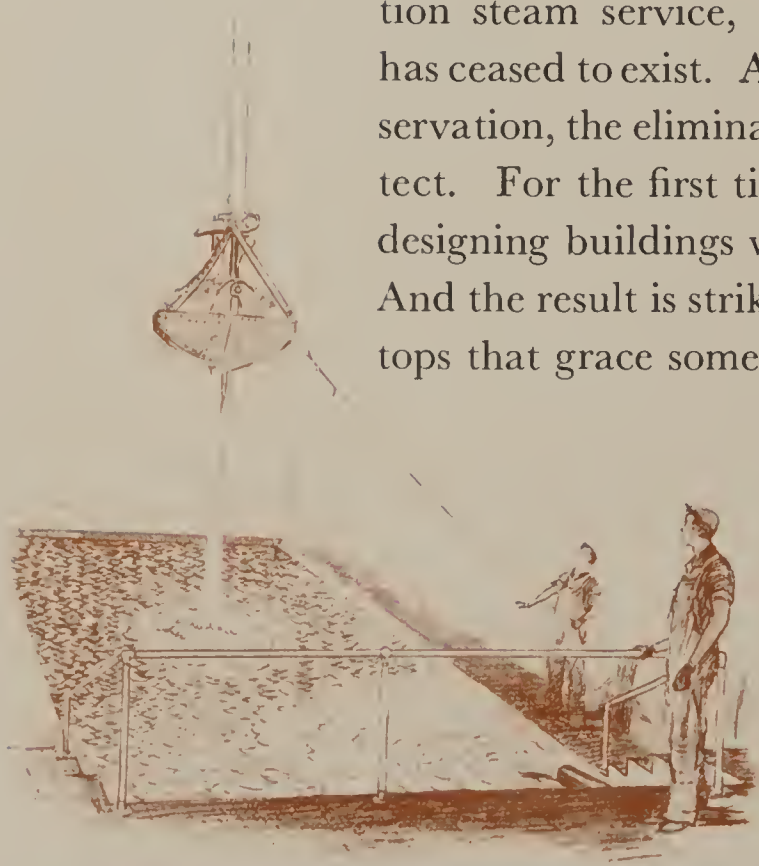
Pipes that guide the steam within the plant before it starts its rapid journey through the street mains

Endless belt coal conveyor at the Kips Bay Station



for stacks and heating equipment became a real problem. Instead of offering a field for the architect's talents for decoration and embellishment, chimneys began, especially with the advent of the skyscraper, to present grave difficulties.

And now, because of the advantages and the reliability of central station steam service, the age-old need for chimneys and smokestacks has ceased to exist. Aside from considerations of economy and space conservation, the elimination of the chimney opened new vistas for the architect. For the first time, free rein can be given to the imagination in designing buildings without the hampering consideration of chimneys. And the result is strikingly apparent in our skyscraper. The ornamental tops that grace some of the most beautiful buildings would have been most impractical without central station steam service. Imagine columns of smoke rising



Ashes at the plants are flushed into a tank and removed by truck or barge while wet

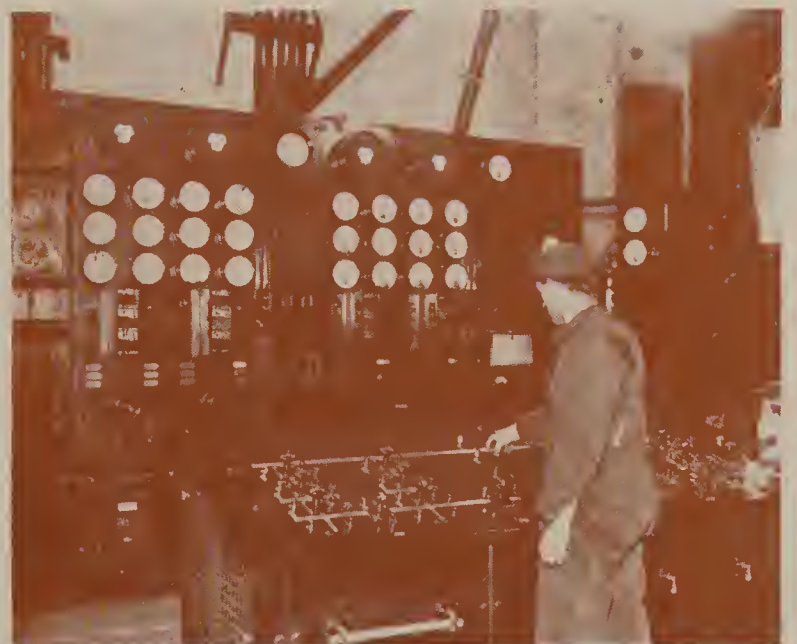


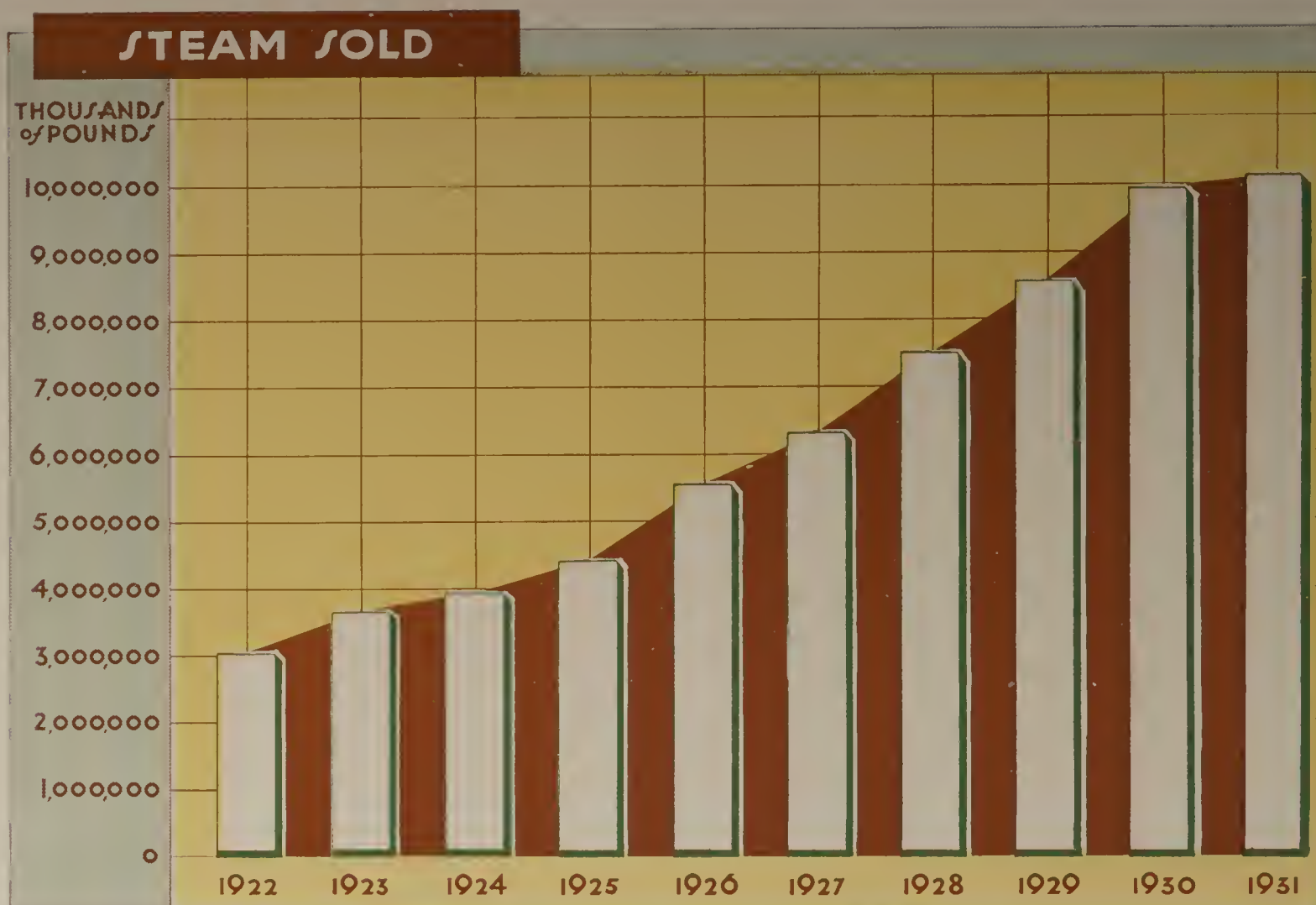
Installing two expansion joints—the copper bellows that give the mains a chance to stretch

where now glitter the graceful pinnacles of many of our skyscrapers of today. Were it not for central station steam service, each building would have to have a chimney, and the building with its slender graceful height would give the impression, more than anything else, of being a gigantic smokestack.

On Manhattan Island, within an area of two square miles, the New York Steam Corporation's centralized service has eliminated soot from the burning of 1,200,000 tons of coal a year and the belching of smoke and gas from more than 2,500 chimneys. Were it not for central station steam service, many chimneys, now either in disuse or never installed in the large office buildings and hotels, would each be pouring out more smoke than the entire chimney capacity of a fair sized city.

The control boards where the steam demands of a great city are flashed by automatic signals and are met by the turning of levers





In the past nine years, the amount of steam sold has more than tripled

But the elimination of the chimney is only one of the benefits derived through the purchase of steam from a central generating station. Below the street level, central station steam service has opened still another vista for the skill of the modern architect. Space formerly devoted to machinery, boiler rooms and coal bins is now utilized for offices, bank vaults, restaurants and stores, or, in the case of residences, for recreation rooms. Modern ventilation and lighting systems have removed the disadvantages of subsurface space, and the architect is conquering new worlds in giving the highest degree of beauty and utility to these subterranean realms of newly discovered uses.

Harvey Wiley Corbett, recognized as one of the most distinguished architects of the day, has written especially for this book, the following interesting story of the role central station heating has come to play in the modern building:



New home of the First National Bank, at the north corner of Broadway and Wall Street, which will use New York Steam Corporation service. The former building on this site, owned and occupied for many years by the First National Bank, was the first customer of The New York Steam Company (March 3, 1882)

“The American visiting Europe is so impressed with the wealth of historic background which antedates by so many centuries anything we have to offer with our tender youth of only one hundred and fifty-five years of national existence that he often wonders how foreigners visiting our shores feel about us.

“To be sure, we can show our enormous buildings, high-speed elevators, crowded streets and jammed subways. We can boast of speed, size and quantity, our material progress or reasonable security. But Europe,

Installation of new mains can be carried on today without littered pavements or interference with traffic, as this photograph, taken during the installation of a main in front of the Pennsylvania Station and Hotel clearly shows



too, has many of these things, though in lesser degree. Is there no one outstanding thing which foreigners find here that is peculiarly ours, something of which we ourselves may hardly be conscious but which impresses the visitor more acutely than any other single feature?

“I have often asked foreigners this question and almost invariably have found that after they have finished being polite and telling me how marvelous our skyscrapers are, or being hypercritical and telling me how provincial and archaic our government is, they finally get down to the real point and tell me how comfortably we live. And I find that by comfort they mean temperature.

“We seem by some subtle process, which is not apparent on its face, to have eliminated the rigors of winter. Our homes are warm; the temperature of our offices is equable; our stores are attractive, and even our trains, motors and airplanes are comfortable. And all because the right temperature is there, without our being conscious of the fact.

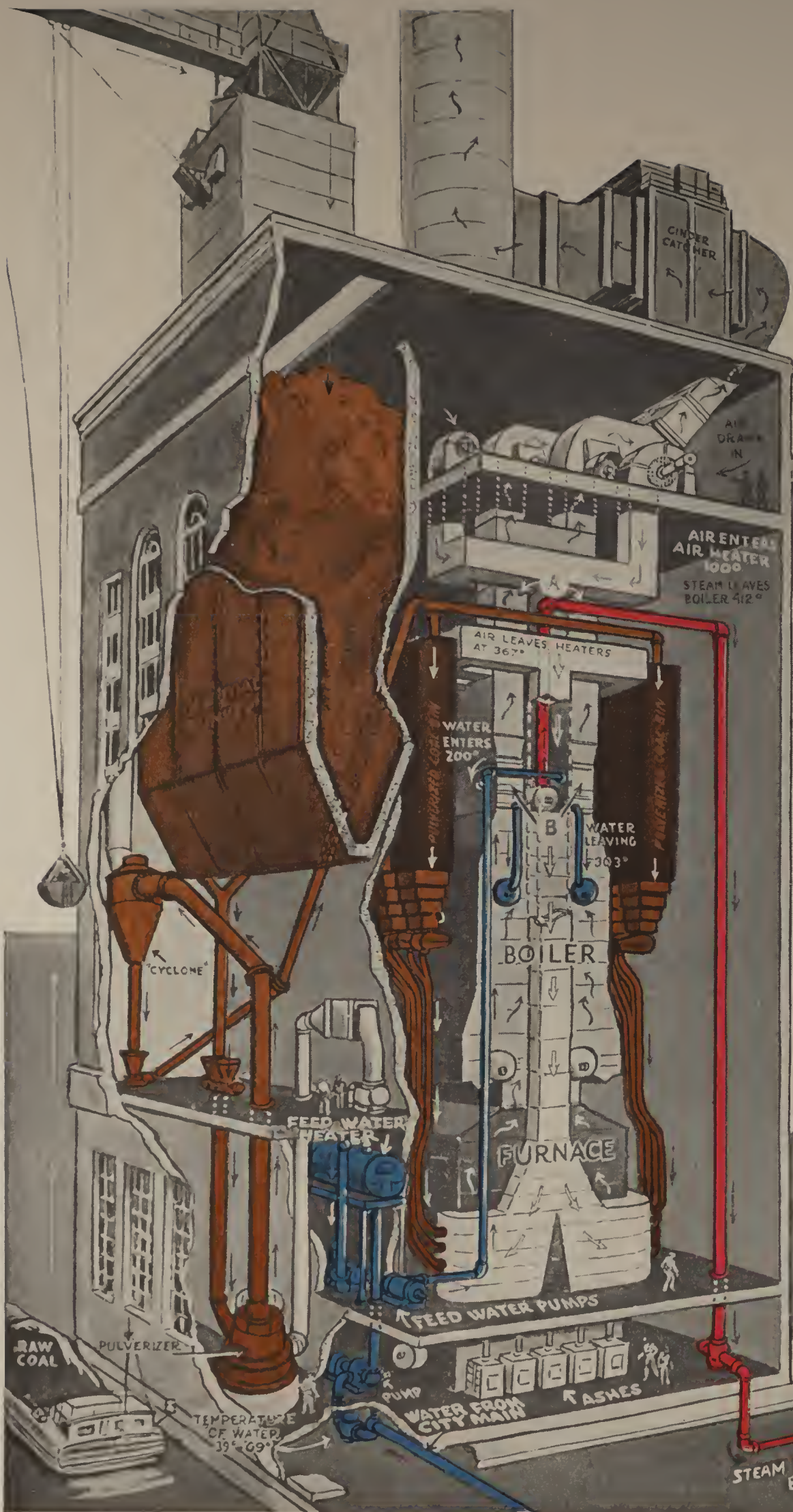
“We Americans take this sort of thing for granted and find it lacking so seldom that we make strenuous complaint when we do occasionally run into some cold spot. But to the foreigner it is a never-ending source of surprise and delight, and it might be well to think about this matter of temperature comfort and how we get it.

“The source of all artificial heat is a fire somewhere. We know what it is in a typical London office—a small grate that warms only one side of you while the other freezes. We know what it used to be in an old-fashioned house, with such a grate in each room and all the consequent care and trouble to cart coal and ashes, requiring a large staff of servants. American ingenuity put this grate in the basement and devised a method of distributing the heat throughout the house. The same thing was true of artificial light, passing through the stages of candle, oil lamps, gas and electricity. But in the matter of heat we are only now beginning to arrive at a point where we are as efficient as we have been in light.

“The individual heating plant is as archaic in a sense as the old-fashioned grate. Today we are concentrating our fireplaces at a few centrally situated points in the city where steam is made very much as electricity



The two uptown stations along the East River at Fifty-ninth and Sixtieth Streets, taken from the Queensborough Bridge, a glimpse of which may be seen at the extreme right



THE GENER UTIL

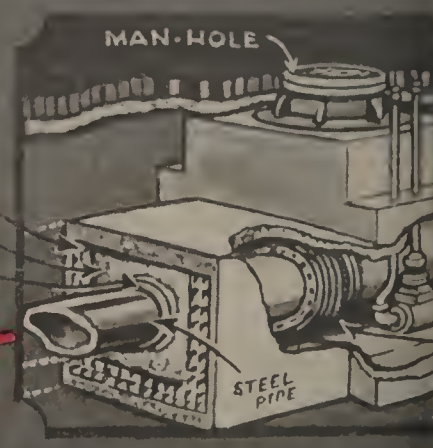
New York Steam
grammatically in

Brown in
bunker, through a p
coal bins, and finally

Blue lines
mains, through feed
and into the boiler, t
its progress to over 30

The path of
being sucked in at the
pre-heater (A) where
into the furnace below

Red lines
header, to a distribut
sumer's building, thro
ators and other steam



ON, DISTRIBUTION AND TION OF STEAM

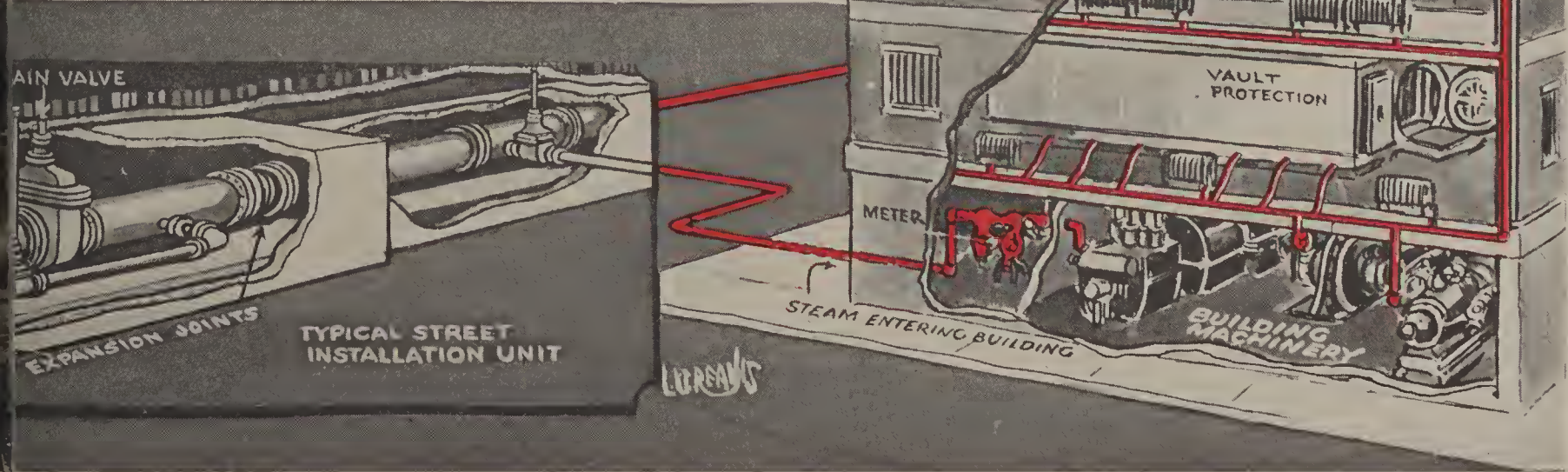
poration service is depicted dia-
drawing reproduced from FORTUNE.

he path of the coal from the barge, into the
r, a cyclone separator, into the pulverized
the furnace under the boiler.

o the path of the water from the city
heaters, feed pumps, economizers (B),
perature of the water being raised during

r for combustion is shown in white, the air
f the building, forced by fans through the
s warmed by the escaping gases, and thence

a the path of the live steam from the boiler
rin, through a service pipe, into a con-
meters and thence to engines, pumps, radi-
n equipment.





An unusual view of the Kips Bay Station taken from the East River. Waterside Station of The New York Edison Company in the foreground

is made, and then through a highly efficient system of pipes and underground conduits, this steam is distributed where needed to any type of building from the simple residence to the great skyscrapers. By this method, heat has become as accessible and as economically distributed as electric current, and the age-old problem of keeping warm in winter is no longer a matter of concern, becoming so commonplace a fact that only the foreigner, unaccustomed to such comfort, appreciates our advantages.”

★ ★ ★ ★

It is doubtful if even Mr. Andrews, with his exceptional vision, could have foreseen that from his original little steam plant with its mile or two of leaky pipes, there would develop so important a public utility. Or that the reliability, economy and convenience of central station steam service would become so thoroughly established as to permanently benefit public health and exert a profound influence on American architecture, especially in the design of the skyscraper. But thereby, surely, the faith and perseverance of the Pioneers have been fully vindicated.



FIFTY years of service is a record of which to be proud, especially when that service has been continuous from the development stage of an industry, with an almost uninterrupted growth in sales and in territory served, despite many trials and serious difficulties. Such is the record of the central station steam heating industry in New York City.

The present loyal and competent organization, grown to many times the size of the old, due to the greatly increased business and property, is carrying on many of the policies that have long obtained. There has ever been a constant striving to develop methods and equipment for rendering the highest character of service at rates as low as is consistent with the cost of producing and distributing steam. The plan has always been to expand the service gradually into new territory and to coordinate such expansion of the distribution system with the increase of boiler plant capacities.

It has seemed to us appropriate, therefore, in this booklet, to present a permanent record of the history of the enterprise, as a tribute to the foresight, initiative and aggressiveness of the pioneers of the past half-century.

William J. Thurn
PRESIDENT

THE LARGEST BUILDINGS IN MANHATTAN

ALL MANHATTAN ISLAND BUILDINGS WITH A CAPACITY OF MORE THAN FOUR MILLION CUBIC FEET

*About 50% of the Buildings in this List are Supplied with Steam by the New York Steam Corporation,
notwithstanding that the Territory now Served by the Corporation Embraces only 10% of the Area of
Manhattan Island*

ADDRESS	NAME OF BUILDING	Type of Building	Year of Erection	Number of Floors above Ground	Height above Ground (Feet)	Ground Area (Sq. Feet)	Volume above Ground (M Cu. Ft.)
Audubon Ave. at 192nd St.	George Washington High School	School	{1923 1924}	5	182	102,500	4,402
276-90 Avenue C.....	City Repair Shop.....	Shop	1924	10	183	57,300	11,000
17 Battery Place.....	Whitehall.....	Office	{1902 1910}	32	388	34,944	9,808
Bowling Green.....	Custom House.....	Office	{1901 1907}	7	126	54,300	5,800
2-16 Broad Street.....	New York Stock Exchange.....	Office	{1921 1926}	24	348	31,530	7,641
15 Broad Street.....	Equitable Trust Company.....	Office	1928	42	550	26,000	10,800
25 Broad Street.....	Broad Exchange.....	Office	1900	20	279	23,600	6,800
30-4 Broad Street.....	Continental Bank.....	Office	1931	46	562	13,200	5,500
67 Broad Street.....	International Telephone.....	Office	{1927 1929}	35	443	25,800	7,400
2 Broadway.....	New York Produce Exchange...	Office	{1881 1884 1894 1896}	11	225	72,000	6,600
11 Broadway.....	Bowling Green.....	Office	{1897 1920}	22	347	28,000	5,900
25 Broadway.....	Cunard.....	Office	1920	23	330	48,400	11,426
26 Broadway.....	Standard Oil.....	Office	{1921 1923 1925 1928}	30	505	42,000	10,400
39 Broadway.....	Fred F. French.....	Office	1927	36	442	15,900	4,800
42 Broadway.....	42 Broadway.....	Office	1903	21	281	21,100	5,000
61 Broadway.....	Adams.....	Office	1913	33	448	21,700	8,400
71 Broadway.....	Empire.....	Office	1898	23	313	14,300	4,100
111 Broadway.....	Trinity.....	Office	{1905 1907}	21	293	18,936	5,300
115 Broadway.....	United States Realty.....	Office	1907	21	295	16,592	4,710
120 Broadway.....	Equitable.....	Office	1915	41	515	50,000	22,200
149 Broadway.....	Singer.....	Office	{1898 1899 1907 1908}	45	612	27,723	6,558
165 Broadway.....	Benenson City Terminal	Office	1907	32	491	31,468	10,680
195 Broadway.....	American Tel. and Tel. Co.....	Office	{1913 1915 1921}	27	365	35,000	8,300
225 Broadway.....	Transportation.....	Office	1927	46	440	16,500	5,532
233 Broadway.....	Woolworth.....	Office	1913	60	792	28,900	13,200
270 Broadway.....	270 Broadway.....	Office	1929	28	370	15,900	4,700
346 Broadway.....	New York Life Insurance Co....	Office	{1889 1896}	13	198	29,600	5,500
715-27 Broadway.....	New York Commercial.....	Loft	1895	12	163	36,800	5,900
756-70 Broadway.....	John Wanamaker (South Bldg.)	{Dept. Store}	1905	16	237	62,271	15,000
772-86 Broadway.....	John Wanamaker (North Bldg.)	{Dept. Store}	1862	8	105	55,000	6,000
1148-54 Broadway.....	Victoria.....	Loft	1914	20	300	19,700	5,600
1282-1300 Broadway....	Hotel McAlpin.....	Hotel	{1911 1912 1918}	25	306	36,800	10,700

ADDRESS	NAME OF BUILDING	Type of Building	Year of Erection	Number of Floors above Ground	Height above Ground (Feet)	Ground Area (Sq. Feet)	Volume above Ground (M Cu. Ft.)
Broadway at 34th Street.	R. H. Macy & Company.....	{ Dept. Store }	{ 1922 } { 1929 }	21	322	134,100	31,806
1351 Broadway.....	Lefcourt-Marlboro.....	Loft	1925	21	248	19,300	4,700
1375-83 Broadway.....	Lefcourt-State.....	Loft	1927	24	289	17,600	4,700
1385 Broadway.....	Bricken-Broadway.....	Loft	{ 1925 } { 1926 }	23	360	18,800	5,100
1400 Broadway.....	1400 Broadway.....	{ Loft and Office }	1930	35	401	35,000	8,600
1412-16 Broadway.....	Lefcourt-Manhattan.....	Loft	1926	23	267	17,500	4,000
1425 Broadway.....	Metropolitan Opera House.....	Theatre	{ 1883 } { 1893 }	7	100	50,225	5,023
1440 Broadway.....	Central National Bank.....	Office	1924	25	400	31,000	7,500
1441 Broadway.....	Bricken-Textile.....	Office	1929	33	489	18,217	5,906
1446-50 Broadway.....	Continental.....	Office	{ 1930 } { 1931 }	42	511	13,500	4,100
1501 Broadway.....	Paramount.....	{ Office Theatre }	1926	32	455	42,000	7,500
Broadway at 44th Street	Hotel Astor.....	Hotel	{ 1904 } { 1909 }	11	160	56,600	8,354
1767 Broadway.....	Fisk.....	Office	1921	26	314	22,000	5,480
1775 Broadway.....	General Motors.....	Office	1926	27	318	32,000	7,000
2101-15 Broadway.....	Hotel Ansonia.....	Hotel	{ 1902 } { 1930 }	17	226	40,300	7,000
2201-17 Broadway.....	Apthorp Apartments.....	Aptmt.	1907	12	150	50,592	5,953
2370 Broadway.....	Belnord Apartments.....	Aptmt.	1912	14	160	66,732	6,850
480 Canal Street.....	Maltz Industrial.....	Loft	1928	12	159	25,105	4,000
Cathedral Parkway and Amsterdam Avenue	Cathedral of St. John The Divine	Church	{ 1900 } { 1931 }	1	200	92,400	10,500
2 Cedar Street.....	Sixty Wall Tower (Cities Service)	Office	{ 1930 } { 1931 }	67	950	32,500	13,000
160 Central Park South ..	Essex House.....	{ Aptmt. Hotel }	1930	42	461	41,000	7,300
180 Central Park South ..	New York Athletic Club.....	Club	1927	20	243	20,000	5,000
25 Central Park West....	Century Apartments.....	Aptmt.	1931	30	340	50,000	6,817
115 Central Park West...	Majestic Apartments.....	Aptmt.	1931	30	340	42,000	6,500
145 Central Park West...	San Remo Apartments.....	Aptmt.	1930	28	365	22,000	4,200
Central Park West at 77th to 81st Streets	American Museum of Natural History	Museum	{ 1919 } { 1923 } { 1926 } { 1930 }	6	135	278,000	18,100
211-19 Central Park West	Beresford Apartments.....	Aptmt.	1929	20	280	29,300	5,200
300 Central Park West...	El Dorado Apartments.....	Aptmt.	1930	29	346	40,000	6,000
21 Centre Street.....	Hall of Records.....	Office	1897	9	153	29,500	4,100
Centre, Reade and Duane Streets	Municipal.....	Office	{ 1904 } { 1914 }	39	560	42,300	15,400
Centre, Pearl and Worth Streets	New York County Courthouse..	{ Court House }	1927	7	128	67,000	7,500
30 Church Street.....	Fulton } Hudson Terminal Buildings	Office	{ 1907 } { 1912 }	22	275	55,900	8,800
50 Church Street.....	Cortlandt }	Office	1907	22	264	26,800	6,100
City Hall Park.....	United States Federal Court and Post Office	Office	{ 1875 } { 1880 }	6	125	48,000	6,100
Convent Ave. at 140th St.	College of The City of New York, Main Building	School	1848	5	133	19,600	4,400
50-60 Corlears Street....	Gold Dust Corporation.....	Mill	1906	10	145	40,700	5,300
103-25 Eighth Avenue...	Union Inland Terminal No. 1...	Wareh'se	1932	15	225	164,800	37,000
421-41 Eighth Avenue...	United States Post Office.....	Office	1914	5	100	139,000	11,100
461 Eighth Avenue.....	Printing Crafts.....	Loft	{ 1915 } { 1916 }	22	353	24,500	7,400

ADDRESS	NAME OF BUILDING	Type of Building	Year of Erection	Number of Floors above Ground	Height above Ground (Feet)	Ground Area (Sq. Feet)	Volume above Ground (M Cu. Ft.)
481-97 Eighth Avenue...	Hotel New Yorker.....	Hotel	1929	40	441	33,900	11,300
520-30 Eighth Avenue...	36th Street and Eighth Ave. Corp.	Loft	1926	24	295	24,800	6,600
700 Eighth Avenue.....	Lincoln Hotel.....	Hotel	1927	30	317	20,000	4,500
825 Eighth Avenue.....	Madison Square Garden.....	Arena	1925	1	108	75,000	7,663
261 Eleventh Avenue....	Terminal Warehouse.....	Wareh'se	{1911 1912}	9	108	137,000	11,900
628-44 Eleventh Avenue	D. Auerbach Candy Company...	Loft	{1913 1914 1919}	11	169	34,000	8,450
775-87 Eleventh Avenue	Packard Motor Company.....	Garage	1928	8	100	44,000	4,400
80 Elm Street.....	Hallenbeck-Hungerford.....	Loft	1914	17	243	18,300	4,300
53-5 Fifth Avenue.....	55 Fifth Avenue.....	Office	1911	18	241	18,300	4,100
200 Fifth Avenue.....	Fifth Avenue.....	Office	1909	14	183	51,550	8,907
225 Fifth Avenue.....	Brunswick.....	Office	{1906 1907}	12	150	30,500	4,100
285 Fifth Avenue.....	Textile.....	{Show Rooms}	1920	16	232	36,300	6,939
350 Fifth Avenue.....	Empire State.....	Office	1930	85	1,252	84,100	36,000 {Incl. Basem't}
355-71 Fifth Avenue....	B. Altman & Company.....	{Dept. Store}	1906	13	218	82,750	13,100
424-34 Fifth Avenue....	Lord & Taylor.....	{Dept. Store}	1914	12	160	51,400	7,700
Fifth Avenue; 40th to 42nd Streets	New York Public Library.....	Library	1911	3	128	112,600	8,700
500 Fifth Avenue.....	500 Fifth Avenue.....	Office	1930	59	680	21,000	7,000
521 Fifth Avenue.....	Lefcourt-National.....	Office	1928	37	476	19,400	5,600
551 Fifth Avenue.....	Fred F. French.....	Office	1926	38	397	19,000	4,800
Fifth to Sixth Avenues; 48th to 50th Streets...	Rockefeller Center (Radio City) <i>Buildings Under Construction</i>						
	Number 1.....	Office	—	70	851	99,770	36,000
	Number 10.....	Office	—	31	407	11,126	5,000
	Theatre Number 10.....	{Int'l Music Hall}	—	—	121	60,672	8,000
	Theatre Number 8.....	{Sound Motion Picture Theat.}	—	—	100	36,420	4,500
	<i>Future Buildings</i>						
	Number 4.....	Store	—	12	170	40,167	8,000
	Number 5.....	Office	—	45	550	21,472	11,000
	Number 6.....	Office	—	45	550	21,472	11,000
	Number 7.....	Store	—	7	100	39,279	5,000
	Proposed Opera House.....	Theatre	—	—	100	63,355	7,000
Fifth Ave. at 50th Street.	St. Patrick's Cathedral.....	Church	1878	1	345	84,000	4,700
611-21 Fifth Avenue....	Saks-Fifth Avenue.....	{Dept. Store}	1923	10	210	40,000	7,000
728-34 Fifth Avenue....	Heckscher.....	Office	1921	25	342	26,500	4,200
745 Fifth Avenue.....	Squibb.....	Office	{1929 1930}	34	435	20,000	6,318
761-75 Fifth Avenue....	Savoy-Plaza Hotel.....	Hotel	1927	32	378	29,000	8,300
768 Fifth Avenue.....	Plaza Hotel.....	Hotel	{1907 1921}	19	269	53,100	10,600
Fifth Ave. at 61st Street..	Hotel Pierre.....	Hotel	{1929 1930}	41	512	26,500	5,400
504 First Avenue.....	Bellevue Hospital.....	Hospital	1930	9	159	88,800	4,300

ADDRESS	NAME OF BUILDING	Type of Building	Year of Erection	Number of Floors above Ground	Height above Ground (Feet)	Ground Area (Sq. Feet)	Volume above Ground (M Cu. Ft.)
225 Fourth Avenue.....	American Woolen.....	Office	{1909 1910}	19	290	24,200	6,200
324-42 Fourth Avenue...	Metropolitan Life Insurance Co.	Office	1931	28	384	39,200	12,268
354 Fourth Avenue.....	Hess.....	Loft	{1912 1913}	20	277	20,000	5,200
60 Hudson Street.....	Western Union.....	Office	1929	24	370	52,700	15,800
303-21 Hudson Street ...	Henry Heide Incorporated.....	Loft	{1904 1907 1911}	10	134	38,500	4,600
341-61 Hudson Street ...	Standard Statistics.....	Loft	1930	17	268	49,500	10,700
374 Hudson Street	U. S. Appraisers Stores	Loft	1928	12	195	81,600	12,700
395 Hudson Street	Western Electric Company.....	{Loft and Office}	1920	9	137	66,000	7,000
2-10 Irving Place.....	Consolidated Gas Company	Office	{1913 1927 1929}	33	478	64,000	14,200
116 John Street.....	116 John Street.....	Office	1930	35	425	10,900	4,000
60-78 Lexington Avenue	165th Infantry Armory.....	Armory	1904	5	110	62,900	4,800
206 Lexington Avenue...	New York Furniture Exchange..	Loft	1925	16	200	29,700	5,400
395 Lexington Avenue...	Chrysler.....	Office	1929	77	1,046	36,000	12,400
Lexington Ave. at 42nd St.	Commodore Hotel.....	Hotel	1919	26	324	57,292	13,180
Lexington Ave. at 43rd St.	Graybar.....	Office	{1926 1927}	30	392	68,303	15,890
466 Lexington Avenue...	Lexington Avenue.....	Office	{1915 1922}	16	216	55,229	10,400
480 Lexington Avenue...	Grand Central Palace.....	{Show Room}	1911	15	192	55,229	10,000
570 Lexington Avenue...	RCA-Victor.....	Office	1931	50	622	16,100	5,300
Lexington Ave. at 59th St.	Bloomingdale Brothers.....	{Dept. Store}	{1902 1916 1930}	11	200	84,000	9,200
33 Liberty Street.....	Federal Reserve Bank.....	Bank	1924	15	223	45,750	13,800
1 Madison Avenue.....	Metropolitan Life Insurance Co.	Office	{1893 1909}	45	700	83,937	14,494
51 Madison Avenue.....	New York Life Insurance Co....	Office	{1927 1928}	41	617	81,200	18,000
200-204 Madison Avenue	International Combustion Engi- neering	{Aptmt. and Office}	1926	25	390	32,000	7,000
285 Madison Avenue	Murray Hill.....	Office	1925	28	334	26,000	4,600
Madison Ave. at 42nd St.	National City.....	Office	{1895 1899 1920}	15	195	30,600	5,100
Madison Ave. at 43rd St.	Biltmore Hotel.....	Hotel	1913	26	320	43,313	11,500
342 Madison Avenue	Canadian Pacific.....	Office	1920	21	265	23,000	6,000
Madison Ave. at 45th St.	Roosevelt Hotel.....	Hotel	1924	17	208	43,313	7,900
370 Madison Avenue	Ritz-Carlton Hotel—Carlton House	{Hotel and Aptmt.}	1910	16	214	37,800	5,375
383 Madison Avenue	383 Madison Avenue	Office	1923	13	161	43,350	7,700
444 Madison Avenue	444 Madison Avenue	Office	1931	40	518	16,500	4,600
80 Maiden Lane.....	80 Maiden Lane.....	Office	{1911 1912}	25	315	20,539	6,478
14 Nassau Street.....	Chase National Bank.....	Office	1927	38	499	17,000	7,520
32 Nassau Street.....	Mutual Life Insurance Company	Office	{1885 1922}	15	222	61,000	9,200
1 Park Avenue.....	1 Park Avenue.....	Office	1925	18	232	40,487	10,308
2 Park Avenue.....	Park Avenue.....	Office	1927	28	349	40,200	11,000
Park Avenue at 42nd St..	Grand Central Station.....	R.R.Ter.	1912	7	128	284,906	25,519

ADDRESS	NAME OF BUILDING	Type of Building	Year of Erection	Number of Floors above Ground	Height above Ground (Feet)	Ground Area (Sq. Feet)	Volume above Ground (M Cu. Ft.)
Park Avenue at 45th St...	Grand Central Terminal	Office	{1905 1911}	7	116	60,718	5,213
230 Park Avenue	New York Central.....	Office	1929	34	420	69,153	15,350
247 Park Avenue	Park Lexington	Office	1924	21	216	26,108	4,000
250 Park Avenue	Postum.....	Office	1924	20	247	24,970	4,001
270 Park Avenue	Hotel Marguery.....	Hotel	1918	12	152	68,283	9,596
277 Park Avenue	277 Park Avenue.....	Aptmt.	1924	12	139	81,337	6,425
290 Park Avenue	290 Park Avenue.....	{Aptmt. Hotel}	1921	16	203	30,125	4,551
300 Park Avenue	300 Park Avenue.....	{Aptmt. Hotel}	1927	17	203	27,815	4,800
309 Park Avenue	Waldorf-Astoria Hotel.....	Hotel	{1930 1931}	44	501	81,337	21,000
375 Park Avenue	Montana Apartments.....	Aptmt.	{1912 1913}	12	150	37,000	4,500
480 Park Avenue	480 Park Avenue.....	Aptmt.	1928	20	261	25,000	4,200
641 Park Avenue	107th Infantry Armory.....	Armory	{1877 1880}	5	115	74,100	5,600
1181-97 Park Avenue....	1185 Park Avenue.....	Aptmt.	1929	15	165	50,000	5,800
15 Park Row.....	Park Row.....	Office	1896	32	390	14,500	4,300
1 Pershing Square.....	Pershing Square.....	Office	1923	24	329	25,000	7,500
2-12 Reade Street.....	Court Square.....	Office	1926	24	282	18,500	4,100
2 Rector Street.....	2 Rector Street.....	Office	{1906 1926}	27	350	18,000	4,800
19 Rector Street.....	19 Rector Street.....	Office	1930	37	446	19,300	4,700
275 Seventh Avenue.....	Lefcourt Clothing Center.....	Loft	1928	26	337	22,100	6,000
319-35 Seventh Avenue..	Seventh Avenue.....	Loft	1920	20	248	20,000	4,600
Seventh Ave. at 31st St..	Governor Clinton Hotel.....	Hotel	1929	28	345	18,800	4,400
393 Seventh Avenue.....	Equitable Life Assurance Society	Office	{1923 1924}	26	391	60,000	14,000
Seventh to Eighth Aves.; 31st to 33rd Streets ...	Pennsylvania Railroad Terminal	R.R.Ter.	1909	4	152	335,700	24,700
401 Seventh Avenue.....	Pennsylvania Hotel.....	Hotel	1917	22	293	76,000	12,300
450 Seventh Avenue.....	Nelson Tower.....	Office	1930	48	560	14,999	5,531
463-7 Seventh Avenue...	Arsenal.....	Loft	1925	22	258	19,200	4,500
498 Seventh Avenue.....	Garment Center Capital	Loft	1920	24	301	38,000	9,600
512 Seventh Avenue.....	Garment Center Capital	Loft	1920	18	209	35,300	6,000
501-11 Seventh Avenue..	501 Seventh Avenue.....	Loft	1923	17	214	23,700	4,700
510-18 Seventh Avenue..	Navarro.....	Office	1929	44	541	14,100	6,200
527 Seventh Avenue.....	Fashion Center.....	Loft	1925	23	275	19,300	4,800
528-36 Seventh Avenue..	530 Seventh Avenue.....	Loft	1929	30	392	11,700	7,000
Seventh Ave. at 50th St..	Roxy Theatre.....	Theatre	1926	1	100	46,200	4,400
Seventh Ave. at 50th St..	Hotel Taft.....	Hotel	{1925 1927}	20	201	30,000	5,900
Seventh Ave. at 55th St..	Park Central Hotel.....	Hotel	1926	31	357	35,000	8,000
616-32 Sixth Avenue ...	Central Mercantile.....	Loft	1895	6	248	89,500	9,400
Sixth Ave. at 33rd Street	Gimbel Brothers.....	{Dept. Store}	1910	11	149	79,000	11,700
1120-36 Sixth Avenue ...	Hippodrome.....	Theatre	1904	1	91	47,600	4,200
Sixth Avenue at 58th St..	Hotel Barbizon-Plaza.....	Hotel	{1929 1930}	40	450	17,900	4,300
85 Tenth Avenue.....	National Biscuit Company	Loft	1913	10	178	45,100	7,600
97-111 Tenth Avenue ...	Merchants Refrigerating Co.....	Loft	1917	10	128	58,200	7,500
702 Third Avenue.....	Commerce.....	Office	{1930 1931}	35	446	17,000	4,300
25-57 Varick Street	N. Y. Central R. R. F'g't. Term.	{F'g't. Term.}	1868	3	54	180,200	8,900

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75 Varick Street	Holland-Plaza	Loft	1929	16	246	64,400	12,300
200 Varick Street	Graphic Arts Center	Loft	1926	12	162	35,500	5,869
225 Varick Street	Maltz	Loft	1926	12	162	25,000	4,100
24 Walker Street	New York Telephone Company	Office	{ 1914 1918 1932 }	28	429	45,945	18,672
1 Wall Street	Irving Trust Company	Office	{ 1929 1930 }	50	659	19,700	8,324
10-14 Wall Street	Bankers Trust Company	Office	{ 1912 1931 }	39	437	33,150	12,500
40 Wall Street	Bank of Manhattan Company . .	Office	1929	63	927	33,599	11,900
44 Wall Street	Bank of America	Office	1925	24	329	14,300	4,000
65 Wall Street	Wall and Hanover	Office	1928	34	438	17,200	4,800
120 Wall Street	120 Wall Street	Office	1929	33	432	21,500	6,900
641 Washington Street . . .	U. S. Government Warehouse . .	Loft	{ 1892 1899 }	10	146	53,000	7,900
90 West Street	West Street	Office	{ 1906 1907 }	23	325	16,890	4,733
140 West Street	New York Telephone Company	Office	1926	31	498	54,696	18,589
463 West Street	Bell Laboratories Incorporated . .	{ Experimental Laboratories }	{ 1896 1898 1899 1924 }	13	178	97,500	9,000
125 West End Avenue . . .	Chrysler Service Garage	Garage	1929	7	100	40,000	4,000
22 William Street	City Bank Farmers Trust Co. . . .	Office	1930	57	750	28,700	9,200
150 William Street	Royal Insurance Company	Office	{ 1926 1930 }	20	277	31,900	7,611
40 Worth Street	Merchant's Square	{ Loft and Office }	{ 1927 1929 }	16	258	44,900	8,000
155 Worth Street	State Office	Office	1929	9	117	62,200	6,000
York Ave.; 68th to 70th Sts.	Cornell Medical Center	Hospital	{ 1930 1931 }	27	376	252,000	21,000 { Group Incl. Basem't }
York Ave.; 70th to 71st Sts.	Cornell Medical Center	Hospital	{ 1930 1931 }	10	144	82,800	7,000 { Group Incl. Basem't }
10-14 East 27th Street . . .	Madison Square	{ Loft and Office }	{ 1910 1911 }	20	273	16,500	4,300
331 East 38th Street	Eleto Company	Loft	1928	11	152	34,600	4,700
10 East 40th Street	10 East 40th Street	Office	1928	44	590	14,500	5,500
30 East 42nd Street	Carbide and Carbon	Office	{ 1912 1913 }	22	280	18,700	5,799
41 East 42nd Street	Liggett	Office	1920	22	308	26,800	5,963
60 East 42nd Street	Lincoln	Office	1929	53	671	40,900	14,000
122 East 42nd Street	Chanin	Office	1929	56	680	29,000	9,930
205-17 East 42nd Street . . .	Bartholomew	Office	1928	20	240	27,500	5,000
220 East 42nd Street	Daily News	Office	1930	36	510	42,500	9,200
305-13 East 45th Street . . .	Central Zone Building Inc.	Loft	1929	24	318	22,500	5,700
111 East 48th Street	Barclay Apartment Hotel	{ Aptmt. Hotel }	1926	14	167	41,170	4,762
432-8 East 53rd Street . . .	River House	Aptmt.	1931	15	207	40,950	4,506
2 East 55th Street	St. Regis Hotel	Hotel	{ 1901 1928 }	20	306	22,300	4,700
12 East 86th Street	Croydon Hotel	{ Aptmt. Hotel }	1924	15	161	45,100	4,200
210 West 18th Street	New York Telephone Company	Office	1930	19	327	23,266	4,512

ADDRESS	NAME OF BUILDING	Type of Building	Year of Erection	Number of Floors above Ground	Height above Ground (Feet)	Ground Area (Sq. Feet)	Volume above Ground (M Cu. Ft.)
435 West 23rd Street	London Terrace Apartments	Aptmt.	{ 1930 1931 }	19	190	158,000	16,727
207 West 24th Street	National Bellas Hess Company . .	Store	{ 1906 1910 1914 }	16	215	49,375	8,000
508-34 West 26th Street	Realty Co. of West 26th St.	Loft	{ 1909 1926 1927 }	12	160	34,500	4,700
601 West 26th Street	Starrett-Lehigh	Loft	{ 1930 1931 }	19	286	124,000	25,700
128 West 31st Street	Greeley Arcade	Loft	1924	17	207	22,300	4,200
225 West 34th Street	Pennsylvania	Loft	1924	22	274	21,700	5,100
330 West 34th Street	J. C. Penney	Loft	1925	18	227	46,000	6,700
460 West 34th Street	Master Printers	Loft	{ 1926 1927 }	19	278	28,900	7,900
230 West 36th Street	New York Telephone Company	Office	{ 1918 1921 1922 }	12	212	33,904	4,688
11 West 42nd Street	Salmon Tower	Office	1926	32	370	33,600	8,900
41 West 42nd Street	Stern Brothers	{ Dept. Store }	1913	8	123	58,600	8,200
342 West 42nd Street	McGraw-Hill	Office	{ 1930 1931 }	34	485	28,300	7,500
217-39 West 43rd Street	New York Times	Office	{ 1923 1931 }	14	170	31,600	5,200
435 West 50th Street	New York Telephone Company	Office	1930	16	275	26,559	4,600
330 West 57th Street	Parc Vendome Apartments	Aptmt.	1931	19	178	72,300	7,370
353 West 57th Street	Am. Women's Assn. Clubhouse . .	Club	1928	27	270	27,000	4,200
10-40 West 143rd Street	15th Regiment Armory	Armory	1923	1	88	59,000	4,091
600-615 West 168th Street	Columbia-Presby. Med. Center .	Hospital	1925	20	231	284,000	21,400
168th St. and Ft. Wash- ington Avenue	102nd Engineers Armory	Armory	1911	3	96	81,000	{ Group Incl. Basem't }

This list does not include power stations and storage buildings of utility companies.

...and now
ROCKEFELLER'S
RADIO CITY

RADIO CITY

—\$250,000,000 Rockefeller enterprise and the greatest building project in the history of the world —has contracted with the New York Steam Corporation for its entire steam requirements. . . .

The New York Steam Corporation regards the award of this contract as an exceptional tribute to the economy, efficiency and cleanliness of central station steam service.



NEW YORK STEAM

C O R P O R A T I O N

A Page Newspaper Advertisement

SERVING a City of TOWERS



**EMPIRE STATE
TOWER**



THE many new tower buildings in New York City, whose entire steam requirements are supplied by the New York Steam Corporation, are now to be joined by the new Empire State Tower to rise on the site of the old Waldorf Astoria Hotel. These towering structures that truly pierce the clouds are burdened with no costly boiler plants and smoke stacks of limited useful life, occupying valuable space. Free from the grime of handling and burning fuel at the base and from contaminating smoke and

soot at the pinnacle, their beauty is not marred nor is their purpose of profitable occupancy partially defeated. Former Governor Alfred E. Smith, President of the company owning the Empire State Tower, in signing a contract with the New York Steam Corporation for the entire steam requirements of this magnificent structure, has provided for the greatest degree of convenience, cleanliness, economy and reliability of service obtainable.



**NEW YORK
STEAM CORPORATION**

A Page Newspaper Advertisement



And now the PENNSYLVANIA



MARKING another milestone in the progress of central station steam service in New York City, The Pennsylvania Railroad Company has contracted with the New York Steam Corporation for the entire steam requirements of the PENNSYLVANIA TERMINAL, the SERVICE PLANT of the Railroad, and the PENNSYLVANIA HOTEL.

Approximately 500,000,000 pounds of steam a year will be delivered under this contract; 40,000,000 cubic feet of building space and thousands of railroad cars will be serviced; and the largest isolated boiler plant in Manhattan will give way to a modern, economical and more healthful system.

Discontinuing operation of this boiler plant will eliminate the handling and burning of more than 40,000 tons of coal and the removal of almost 10,000 tons of ashes a year. The Pennsylvania Zone will benefit, as other districts have benefited, from a clearer atmosphere and abatement of smoke nuisance.



NEW YORK STEAM CORPORATION

A Newspaper Advertisement

—And Now To Supply More Than

1,500,000,000

Pounds of **STEAM** Required by

GRAND CENTRAL GROUP

**IMPORTANT BUILDINGS
IN THE
GRAND CENTRAL
GROUP**

*Grand Central Terminal
New York Central Building
Graybar Building
Grand Central Palace
Terminal Office Building
Biltmore Hotel
Commodore Hotel
Roosevelt Hotel
Yale Club
Hotel Chatham
Barclay Hotel
Park Lane Hotel
Postum Building
Vanderbilt Concourse Building
Terminal Post Office Building
Park Lexington Building
Vanderbilt Avenue Building
Maryuery Hotel
277 Park Avenue
290 Park Avenue
300 Park Avenue
379 Madison Avenue
385 Madison Avenue
466 Lexington Avenue
Waldorf-Astoria Hotel (new)*



Photo by Curtis Flying Service

THE New York Steam Corporation has contracted with The New York Central Railroad Company and The New York, New Haven and Hartford Railroad Company to supply the entire steam requirements of the buildings in the Grand Central Terminal Group, amounting to over 1,500,000,000 pounds of steam annually. This group of buildings occupies an area extending from 42nd Street to 50th Street and from Madison Avenue to Lexington Avenue and embracing approximately twenty city blocks. The more than twenty-five large buildings have a volume of 200,000,000 cubic feet—a veritable city within a city.

With these additions to its list of buildings served, the New York Steam Corporation will supply steam to practically every important building in the Midtown Section. Of new buildings served, over 90% have no boiler plants and a large number are without smoke stacks.

The distribution of steam by the New York Steam Corporation from highly efficient central stations is having a most substantial effect in relieving traffic congestion and eliminating smoke, dirt and noise from important financial, commercial and residential districts of New York City. To generate the quantity of steam which will be distributed by the Corporation during the ensuing year, isolated plants would burn over 875,000 tons of coal and produce over 175,000 tons of ash refuse. This total of over a million tons of coal and ash would necessarily be carted through the most congested streets of the City and would require more than 700 five-ton truckloads every business day of the year.

New York Steam Service, backed by a record of forty-eight years of continuous operation, assures to owners of office buildings, apartment houses, hotels and private residences the utmost dependability and economy.

**SOME WELL KNOWN
BUILDINGS SERVED
BY THE
NEW YORK STEAM
CORPORATION**

*Lincoln Tower
Chanin Tower
Chrysler Tower
Lefcourt Buildings
French Tower
Arnold Constable Tower
Salmon Tower
General Motors Building
Tudor City Group
Savoy-Plaza Hotel
Sherry-Netherland Hotel
Ambassador Hotel
Lincoln Hotel
St. Regis Hotel
New York Athletic Club
Times Building
National City Bank Building
Bank of America Building
Chase National Bank Building
Seamen's Bank for Savings Building
Mutual Life Insurance Building
First National Bank Building
International Telephone and Telegraph Corporation Building
Bank of New York and Trust Company Building
New York Evening Post Building
New York Stock Exchange Building
Transportation Building
National City Company Building
Royal Insurance Building
American Surety Building
Westinghouse Building
City Hall Post Office Building
1 Wall Street Building*

NEW YORK STEAM CORPORATION

280 MADISON AVENUE . . . NEW YORK CITY



Another Newspaper Advertisement



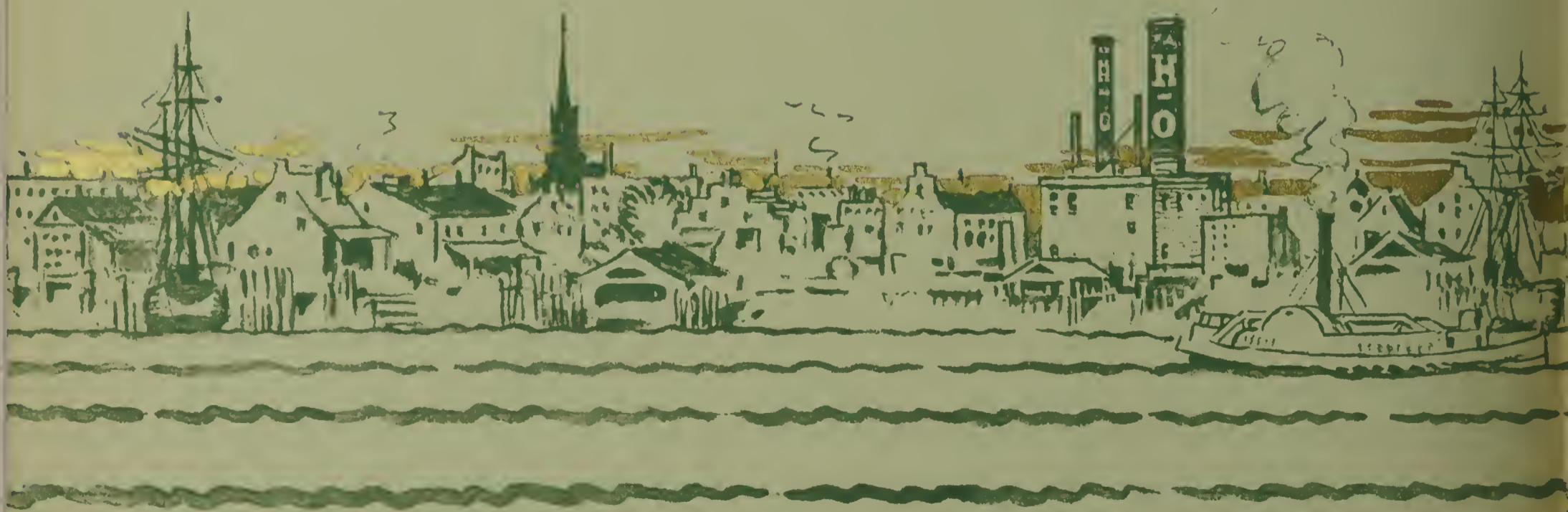
· · VIEW FROM KIPS BAY STATION

One of Four Steam Generating Plants which supply steam to Mid-Manhattan including the Empire State Building. The Downtown Financial Section of Manhattan is also served by the

NEW YORK STEAM CORPORATION

A magazine advertisement

1882



1932



